



Chapter 8

The Impact of EFT on Credit

The Commission investigated the potential impact of EFT on credit markets and credit availability in response to its legislative mandate to take into account, among other things, "the implications of such a system on the availability of credit" and "the need to preserve competition among the financial institutions and other business enterprises using such a system." This chapter presents the findings, observations, and recommendations developed by the Commission from its EFT credit market research program.¹

The Commission's investigation focused on the following questions. First, will EFT affect the aggregate amount of credit available and, if so, what will be the direction and magnitude of that effect? Second, will EFT affect the availability of credit instruments or the ability of different classes of credit grantors to compete, especially those that have historically been granting large volumes of credit? And if so, will such consequences adversely affect the availability of credit to consumers generally or to particular groups of consumers? Third, will EFT affect the availability of housing-related credit, and, if so, how?

BACKGROUND: CREDIT

Access to credit is an important determinant of U.S. household consumption and capital investment patterns. A well developed capital market for consumer mortgage credit facilitates home ownership. Consumer credit accommodates the widespread distribution of automobiles and other durable goods. Recently consumer lines of credit and credit card plans have facilitated and enlarged consumer use of credit. The supply of consumer credit supports total retail sales

¹The material discussed in this chapter is the result of a research program that is documented in *National Commission on Electronic Fund Transfers, "Electronic Funds Transfer and the Availability of Credit: Compendium of Papers Prepared for the National Commission on Electronic Fund Transfers," Internal Working Document IWD-51 (October 1977)* and *NCEFT, "Electronic Funds Transfer and the Availability of Credit: Proceedings of the July 6, 1977 Credit Markets Seminar," IWD-52 (October 1977)*.

and thereby affects the entire production and distribution network of consumer goods.²

Information on consumer credit is provided in Tables 8.1 through 8.8. Table 8.1 shows that, in the early postwar years, consumer credit use grew rapidly, from 4 percent of Gross National Product (GNP) in 1946 to 13 percent in 1965, as consumers rebuilt their holdings of durable goods. More recently, consumer credit outstanding as a percentage of GNP has changed little.

The following discussion describes significant relationships that are revealed by an analysis of consumer credit by type of credit (i.e., type of consumer use) and by type of credit grantor (i.e., provider of consumer credit).

Consumer Credit by Type

The flow of funds accounts show the assets and liabilities of households. These accounts have been used to construct Table 8.2, which divides consumer liabilities into broad categories. Home mortgages account for 61 percent (\$540.3 billion) of these liabilities. The second largest category, consumer credit, including both installment and non-installment consumer liabilities, accounts for 25 percent (\$224.2 billion) of total consumer liabilities.³ The remaining types of liabilities constitute a catch-all group that includes other mortgages and other loans, e.g., loans to purchase securities and loans against the cash surrender value of life insurance policies. They account for 14 percent (\$126 billion) of the total.

Available data show that the largest users of consumer credit are, by age, the youngest; by family size, those with the greatest number of children; and by current income, the highest earners.⁴ Overall,

²The demand for consumer credit is derived from consumer demand for final goods and services. Consumer credit is a supplement to the purchasing power of consumers. Retail sales of durable goods, particularly those of mass merchandisers using consumer credit, reflect a volume of output that enables manufacturers and retailers to achieve significant economies of scale. These savings are reflected in the price of goods and services. See National Retail Merchants Association, "Comments on the Competitive Impact of EFT" (May 31, 1977), p. 5, and NCEFT, IWD-52.

³Installment liabilities include credit repayable in two or more installments, irrespective of whether it is a closed-end account that requires fixed payments over a fixed time interval or an open-end revolving credit arrangement. Closed-end installments arise as consumers arrange financing of consumer durables, such as automobiles, appliances, and mobile homes, and of home improvement and personal loan needs. Open-end liabilities arise as consumers use credit cards and credit lines. Noninstallment credit includes one-payment liabilities, such as secured and unsecured single-payment bank loans, and 30-day charge accounts.

⁴See William Dunkelberg and John Umbeck, "An Economic Analysis of Electronic Funds Transfer Systems: The Impact of EFT on Consumer Credit Users," in NCEFT, IWD-51, Paper 3, pp. 13-17.

Table 8.1. CREDIT MARKET LIABILITIES OF HOUSEHOLDS--END OF YEAR (In Billions of Dollars)

Year	GNP (\$)	Total Credit Market Debt		Household Credit Market Instruments		Home Mortgages		Consumer Credit	
		\$	% of GNP	\$	% of GNP	\$	% of GNP	\$	% of GNP
1946	209.6	353.2	168.5	34.4	16.4	21.6	7.5	8.4	4.0
1950	286.2	427.0	149.2	71.5	25.0	42.0	14.7	21.5	7.5
1955	399.3	581.8	145.7	135.8	34.0	83.5	20.9	38.8	9.7
1960	506.0	777.7	153.0	216.7	42.8	137.4	27.2	56.1	11.1
1965	688.1	1107.2	161.0	340.8	50.0	214.5	31.0	89.9	13.1
1970	982.4	1595.2	162.0	476.8	48.5	290.7	30.0	127.1	12.9
1971	1063.4	1749.8	165.0	522.5	49.0	317.7	30.0	140.1	13.2
1972	1171.1	1943.4	166.0	588.5	50.3	359.3	30.7	159.0	13.6
1973	1306.6	2186.9	167.0	666.8	51.0	405.4	31.0	181.1	13.9
1974	1412.9	2408.9	170.0	715.8	50.7	440.7	31.2	191.3	13.5
1975	1528.8	2620.0	171.0	764.4	50.0	478.7	31.3	200.7	13.1
1976	1706.5	2905.9	170.0	854.5	50.1	540.3	31.7	224.2	13.1

Source: Federal Reserve Board.

Table 8.2. THE HOUSEHOLD BALANCE SHEET, SELECTED YEARS, 1965-1976--END OF YEAR (In Billions of Dollars)

<u>Consumer Assets</u>	<u>1965</u>	<u>1970</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
Demand deposits and currency	\$ 83.4	\$ 117.9	\$ 159.9	\$ 166.9	\$ 174.8
Savings accounts	289.8	426.7	690.6	775.4	884.2
Life insurance and pension fund reserves	260.7	369.9	460.5	532.3	603.9
Credit Market Instruments	176.4	240.8	325.9	352.0	366.2
Corporate stock at market value	635.5	737.5	436.3	575.0	720.9
Other financial assets (net)	19.5	30.7	40.7	45.0	51.2
Subtotal financial assets	<u>1,465.3</u>	<u>1,860.9</u>	<u>2,113.8</u>	<u>2,446.6</u>	<u>2,801.3</u>
Nonfarm family home ownership	494.5	679.4	970.6	1,079.7	1,174.1
Value of consumer-owned durable goods	198.0	257.1	329.0	337.1	355.2
Subtotal fixed assets	<u>692.5</u>	<u>936.5</u>	<u>1,299.6</u>	<u>1,416.8</u>	<u>1,529.3</u>
TOTAL CONSUMER ASSETS	<u>2,157.8</u>	<u>2,797.4</u>	<u>3,413.4</u>	<u>3,863.4</u>	<u>4,330.6</u>
<u>Consumer Liabilities</u>					
Home mortgages	214.7	290.7	440.7	478.7	540.3
Other mortgages	13.4	19.0	23.7	24.8	25.8
Consumer credit	89.9	127.1	191.3	200.7	224.2
Bank loans	12.0	19.1	30.8	28.8	30.9
Other loans	26.4	41.7	55.9	60.6	69.3
TOTAL CONSUMER LIABILITIES	<u>356.2</u>	<u>497.6</u>	<u>742.3</u>	<u>793.5</u>	<u>890.4</u>
CONSUMER NET WORTH	\$1,801.6	\$2,299.8	\$2,671.1	\$3,069.9	\$3,440.2

Source: Federal Reserve Board, Bureau of the Census, and National Consumer Finance Association.

NOTE: Parts may not add to totals because of rounding.

Table 8.3. CONSUMER INSTALLMENT CREDIT OUTSTANDING BY TYPE, 1970-1976--END OF YEAR (In Billions of Dollars)

<u>Type of Credit</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
Automobile	\$35.2	\$39.4	\$46.6	\$52.4	\$52.9	\$55.9	\$66.1
Mobile Home	2.5*	7.2**	9.5**	13.6	14.6	14.4	14.6
Home Improvement	5.0	5.2	6.2	7.4	8.5	9.4	11.0
Bank Revolving	5.1	6.0	7.2	9.1	11.1	12.3	14.4
Personal Loans (Banks and Finance Companies Only)	22.0	23.5	26.1	29.4	30.8	31.9	34.2
All Other	32.2	30.8	31.1	36.4	39.6	41.0	45.2
<u>Total Consumer Installment Credit</u>	<u>\$101.9</u>	<u>\$112.0</u>	<u>\$126.8</u>	<u>\$148.2</u>	<u>\$157.5</u>	<u>\$165.0</u>	<u>\$185.5</u>

*Finance companies only; all others included under "All Other Credit."

**Finance companies and commercial banks only; all others included under "All Other Credit."

Source: Federal Reserve Board.

NOTE: Parts may not add to totals because of rounding.

Table 8.4. PERCENTAGE OF CONSUMER INSTALLMENT CREDIT OUTSTANDING BY HOLDER, 1970-1976 END OF YEAR

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
<u>Source</u>							
Commercial Banks	44.6	46.1	48.0	48.5	48.1	47.7	48.2
Finance Companies	27.1	26.1	25.2	23.9	22.9	21.8	20.8
Credit Unions	12.8	13.2	13.4	13.2	13.9	15.6	16.4
Retailers	13.4	12.4	11.7	11.1	11.4	10.9	10.3
Others	2.3	2.2	1.8	3.3	3.6	4.0	4.2
<u>Total Dollar Value in Billions</u>	\$101.9	\$112.0	\$126.8	\$148.2	\$157.5	\$165.0	\$185.5

Source: Federal Reserve Board.

NOTE: Parts may not add to 100 percent because of rounding.

the greatest users of installment credit appear to be in the \$7,000-\$15,000 per year income range.

The relationship of credit card use to income has been substantially different. For example, only 17 percent of families with an annual income of less than \$3,000 use credit cards in contrast to 84 percent for families earning \$20,000-\$24,000 per year.⁵

Consumer Credit by Credit Grantor (Provider)

As shown in Tables 8.5 and 8.6, the principal providers of consumer credit are commercial banks, savings and loan associations, mutual savings banks, credit unions, finance companies, retailers, and others such as mortgage banking companies, auto dealers, and insurance companies.

The sources of funds these providers use may be deposits, commercial paper, or loans from financial institutions for long-term financing.

Tables 8.5 and 8.6 also show the credit sources for home mortgages and the sources and uses of consumer installment credit extended in 1976. These data reveal the specialized nature of consumer credit granting. For example, 56 percent of all mortgage financing is provided by savings and loan associations. Commercial banks extend the bulk (49 percent) of all consumer installment credit financing. Commercial banks and retailers provide virtually all of the revolving credit financing.

It is useful to examine shifts in the relative importance of different types of providers of consumer installment credit financial services. Share-

of-market figures for major credit grantors for the years 1970-1976 are presented in Table 8.4. Percentage shares have remained relatively constant over this period. Commercial banks increased their share of market from 44.6 percent to 48.2 percent. Banks increased their market share in almost all types of consumer installment credit, with especially rapid growth in revolving credit. Finance companies lost relative market share, decreasing from 27.1 percent in 1970 to 20.8 percent in 1976. Credit unions' market share increased by a third, from 12.8 percent to 16.4 percent. Retailers' market share declined by one-fifth, from 13.4 percent to 10.3 percent.

Table 8.5. HOME MORTGAGE CREDIT EXTENDED BY SOURCE, 1976

<u>Source</u>	<u>%</u>
Savings and Loan Assoc.	56
Commercial Banks	20
Mutual Savings Banks	5
Mortgage Companies	14
Others	<u>5</u>
TOTAL	100

Source: Federal Reserve Board and Department of Housing and Urban Development.

⁵ Lewis Mandell, *Credit Card Use in the United States* (Institute for Social Research: Ann Arbor, Mich., 1972), pp. 16-18.

Table 8.6. CONSUMER INSTALLMENT CREDIT EXTENDED BY SOURCE AND USE, 1976

<u>Source</u>	<u>%</u>
Commercial Banks	49
Finance Companies	19
Credit Unions	15
Retailers	15
Others	2
TOTAL	100

Use

Auto Credit (Total)	33
Commercial Banks	19
Finance Companies	6
Credit Unions	8
Others	--
Mobile Home Credit (Total)	3
Commercial Banks	2
Others	1
Home Improvement (Total)	4
Commercial Banks	2
Others	2

Table 8.6. Continued

<u>Use (Continued)</u>	<u>%</u>
Revolving (Total)	27
Commercial Banks	15
Retailers*	12
Others	--
All Other (Total)	34
Commercial Banks	11
Finance Companies	13
Credit Unions	6
Retailers	3
Others	1
TOTAL	100

*Retail revolving credit is estimated at 80 percent of the Federal Reserve Board's published figures for total installment credit extended by retailers.

Sources: Federal Reserve Board and Department of Housing and Urban Development.

NOTE: Parts may not add to totals because of rounding.

The revolving credit component of consumer installment credit is the segment most likely to be affected by EFT. Table 8.7 compares revolving credit extensions for the years 1970-1976. Over this period the relative share of revolving credit extensions for banks grew from 6.1 percent to 13.4 percent, while retail market share declined from 14.2 percent to 11.3 percent. Table 8.8 shows a similar change for convenience credit.

Market share shifts result from a number of market factors. A number of providers have left the credit market because of inability to compete effectively with their traditional competition. Others have left because a different type of institution entered their markets and provided the same service more efficiently and effectively. Other institutions found different types of credit extensions to be more profitable than consumer credit granting. These shifts are occurring irrespective of EFT.

EFT AND AGGREGATE CREDIT AVAILABILITY

Nature and Impact of EFT

Most of the credit supplied in the U.S. economy is from the savings of households. At the end of 1976, household financial assets amounted to \$2,801 billion, of which \$366 billion was directly invested in Federal, State, local, corporate, and other securities; \$721 billion was invested in equities; \$844 billion was held in time and savings accounts in depository institutions; \$175 billion was held in currency and demand deposits; and \$604 billion was held in insurance and pension fund reserves. (See Table 8.2.)

The role of financial intermediaries is to channel these savings of households to borrowers efficiently. Their function is to locate ultimate borrowers and lenders, assess risks, and negotiate borrowing and lending rates of interest.⁶ Most credit grantors operate in markets subject to some type of regulation. For example, borrowing and lending interest ceilings are generally established by law or regulation.

Within the legal limitations, the spread between the savings and lending rates of interest in a competitive market is determined by the following operating costs of the intermediary: (1) locating potential lenders and borrowers; (2) assessing the risk of potential borrowers; (3) forming contracts, including processing transactions; and (4) enforcing contracts. An essential ingredient of these operations is information.

The nature of the impact of EFT on credit markets would appear to be largely on the quality and availability of information about borrowers. A point-of-sale (POS) system is an electronic information transmission and processing system that can achieve low unit costs by attaining high volumes of transactions. If such systems materialize, they should be expected to reduce credit grantor information costs in the following ways.

⁶ William Dunkelberg and John Umbeck, "An Economic Analysis of Electronic Funds Transfer Systems: The Theory of Credit Markets," in *NCEFT, IWD-51, Paper 1*.

Table 8.7. REVOLVING CREDIT EXTENSIONS 1970-1976 (In Billions of Dollars)

Year	Total Consumer Installment Credit Extension	Revolving Credit*			
		Bank Card Extensions		Retail Extensions	
		\$	%	\$	%
1970	\$112.3	6.8	6.1	15.9	14.2
1971	123.8	8.4	6.8	16.4	13.2
1972	137.1	10.4	7.6	17.1	12.5
1973	157.9	13.9	8.8	19.1	12.1
1974	157.2	17.1	10.9	20.3	12.9
1975	164.2	20.4	12.4	20.3	12.4
1976	193.3	25.9	13.4	21.9	11.3

*Excludes bank overdraft credit.

Source: Federal Reserve Board.

Table 8.8. CONVENIENCE CREDIT EXTENSIONS BY BANKS AND RETAILERS, 1970-1976 (In Billions of Dollars)

<u>Year</u>	<u>Total Extensions</u>	<u>Bank Extensions</u>		<u>Retail Extensions</u>	
		<u>\$</u>	<u>%</u>	<u>\$</u>	<u>%</u>
1970	\$ 6.81	\$2.04	30.0	\$4.77	70.0
1971	7.44	2.52	33.9	4.92	66.1
1972	8.25	3.12	37.8	5.13	62.2
1973	9.90	4.17	42.1	5.73	57.9
1974	11.22	5.13	45.7	6.09	54.3
1975	12.21	6.12	50.1	6.09	49.9
1976	14.34	7.77	54.2	6.57	45.8

Source: Estimates by the Federal Reserve Board, based on data in Table 8.7, assuming that these extensions equal 30 percent of revolving credit extensions.

Locating Potential Lenders and Borrowers. EFT systems would help credit grantors, particularly depository credit grantors, to extend their service facilities into the community at a lower cost than through traditional means. This potential improvement should help attract deposits and have a favorable effect on the granting of credit by the depository credit grantors.

Risk Assessment. EFT systems are likely to have a favorable influence on the risk of credit extension by reducing the costs of collecting and evaluating information about credit applicants. This assumes that information about applicants, now held generally by credit bureaus, will continue to be available to all credit grantors for use in evaluating the risk of extending credit.⁷ Amendments to the Fair Credit Reporting Act and other laws should not limit the collection or dissemination of reliable and accurate information. EFT information transmission and processing systems may lead to an improvement in the ability of the lender quickly and efficiently to gather and process an individual's credit history. Thus, the ability to make accurate and timely credit extension decisions will be enhanced. It should be understood, in light of the Commission's privacy recommendations, that information relating to debits, credits, and balances in individual transaction accounts would not ordinarily be available to third parties.⁸

An additional benefit of EFT is that the credit grantor may be able to gather sufficient information to permit explicit pricing of goods and of financial and nonfinancial services. This may permit credit grantors to move away from familiar "service packages" in which the costs of extending credit and the

rates charged are blurred. That is, with packaging, financial services are lumped together and sold at one price. The reason for service packaging frequently is said to be the high cost of determining consumer demand for each product or service. EFT may promote more explicit price-cost relationships as it reduces the cost to credit grantors of separately measuring and pricing certain consumer services. Where information costs are reduced, the associated services may be explicitly priced, especially where competition is vigorous.⁹

⁷ The National Commission on Consumer Finance has recommended "that to assure an adequate supply of credit to consumers at reasonable prices ... all credit grantors should have access to the credit information system." See *National Commission on Consumer Finance, Consumer Credit in the United States* (Washington, D.C., December 1972), p. 216.

⁸ See Chapter 1, "Privacy."

⁹ See American Bankers Association, "Comments on the Impact of EFT on Consumer Credit" (Aug. 10, 1975), pp. 2-3, which states, "Furthermore, EFT technology will tend to reduce the cost of explicit pricing procedures, thus encouraging institutions to practice such pricing rather than offering service packages." It has been argued, for example, that EFT will lead to explicit pricing of checking accounts because interest will be paid on demand deposits. Also, explicit charges may emerge on credit card use with respect to processing costs and variations in cardholder risks, while the 30-day "free period" may be phased out. See William Dunkelberg and John Umbeck, "An Economic Analysis of Electronic Funds Transfer

Forming Contracts. Revolving credit activated through EFT at the point of sale requires far less administrative time for the credit grantor and is more convenient for the consumer than closed-end credit. Closed-end credit requires that for each purchase and credit extension, the consumer must make several trips to the point of sale and to the credit grantor's office to identify the goods and services, apply for credit, obtain credit, and make the purchase. By contrast, revolving credit requires only a single application for a line of credit, and permits credit extensions to be added to the contract at the point of sale. Further, EFT promises to facilitate the processing of the transaction data generated by each purchase and credit extension as well as payment and other records required to keep the account accurate and current.

Contract Enforcement. An EFT system that is on-line to the point of sale offers the potential for controlling the use and amount of credit of a revolving account because it enables the credit grantor to decide whether to permit each charge against the account. Therefore, EFT is likely to mean that credit extensions currently restricted to closed-end contracts can be shifted to lower-cost revolving arrangements without increasing a lender's risk exposure.

Once on-line, EFT ought to reduce default and delinquency relative to total consumer credit outstanding. With EFT, the information necessary to approve a purchase on credit can be made available over a wider range of markets, to more people, and within less time. As one observer has stated, "if a borrower is delinquent or has defaulted on a loan, either because he cannot or will not pay his debt, this fact can be transmitted through POS terminals

whenever this individual attempts to acquire more credit. Thus, the chances of a consumer unintentionally overextending himself and increasing the risk of default or intentionally borrowing when he knows he cannot pay back the loan will decline."¹⁰

Level of the Impact of EFT

The Commission concluded from the foregoing analysis that if EFT does affect aggregate credit availability, it will do so by reducing the costs of credit grantors and thus increase the availability of credit to consumers.

An argument has been made that EFT will lead to a significant increase in consumer debt extensions and, furthermore, that there may be a more intensive utilization of credit to finance consumables and non-durable goods at the cost of making durable goods purchases on a credit basis. EFT might lead to this consequence if "there is a stronger desire for credit in large segments of the population than is currently made available" and if "it will become reasonable to

⁹ *Continued*

Systems: The Impact of EFT on Consumer Credit Granting Institutions." in NCEFT, IWD-51, Paper 2, pp. 40-42.

¹⁰ *Dunkelberg and Umbeck, NCEFT, IWD-51, Paper 3, pp. 28-29.*

finance smaller transactions with overdraft balances than it is now."¹¹

As EFT development has only recently begun, little empirical evidence exists today as to the level of impact EFT will have on the credit market.¹² In reducing the costs of credit, EFT may expand the amount of available consumer credit. Preliminary analysis indicates that the magnitude of such increase will be small.¹³ The Commission concludes, therefore, that EFT will have a minor effect on the total availability of consumer credit.

EFT AND THE DISTRIBUTION OF CONSUMER CREDIT

The Commission concluded that the effect of EFT on aggregate consumer credit will be minimal. Even though the aggregate may not be affected, however, the distribution of credit among credit grantors and the customers they serve may be significantly changed.

Several credit grantors have argued that they and their customers might be adversely affected by EFT. For example, the National Consumer Finance Association stated to the Commission that:

... the promised expansion of consumer credit activities by more and more institutions with EFT may in fact rebound to the detriment of substantial numbers of consumers by actually restricting their access to credit.

It can be expected, for example, that many depository institutions will vigorously market payments services

including credit to consumers now using alternative credit-granting sources such as consumer finance companies. But it is unlikely that depository institutions will in fact accept any but the better risk finance company customer. The net result could be the loss to the finance company of that higher quality customer that provides the difference between a profitable or nonprofitable operation and the subsequent withdrawal of a significant number of companies from the consumer credit market. The impact of such a result, of course, would be the sharp curtailment of credit

¹¹ See Robert P. Shay, "Will a Bank Debit Card, Accompanied by an Overdraft Capability, Have a Major Impact on Spending Habits, Consumer Credit, and on the Economy?," in NCEFT, IWD-51, pp. 20-27.

¹² See Gary G. Gilbert and David A. Walker, Federal Deposit Insurance Corporation (FDIC), "The Influence of Electronic Fund Transfer Systems on Changes in Bank Market Shares," Working Paper No. 77-2 (1977), and David A. Walker, FDIC, "Contrasts Among Banks: 1974 versus 1976," Working Paper No. 77-1 (1977).

¹³ Dunkelberg and Umbeck, NCEFT, IWD-51, Paper 2, pp. 9-10. This paper estimates a 2- to 4-percent increase in consumer credit.

availability to those consumers who represent too great a risk to other credit grantors.¹⁴

Similarly, the National Retail Merchants Association submitted this statement to the Commission:

Retailers traditionally reach deeper into the universe of credit-worthy applicants than do banks. Because the retailer operates the in-house credit facility as an adjunct to the sale of goods and services, there is an incentive to extend credit to the broadest possible range of credit-worthy applicants. Recent study revealed that more than twice as many consumers with annual family income of under \$15,000 used retail store charge accounts than used bank credit cards.

Another study which may explain this phenomenon indicated that retailers accept 75 percent of all credit applicants, as compared to an acceptance rate of about 50 percent for credit cards issued by financial institutions. Therefore, retailers are concerned that EFT services, including debit cards, will eliminate many alternative sources of credit for consumers.¹⁵

Many retail credit grantors are concerned that acceptance of these EFT-based cards will cause an erosion of their credit customer base. These retail credit grantors offer credit not as a direct profit-making operation but rather as a support operation to facilitate the sale of goods and services.¹⁶ Retailers

operate credit systems at a break-even level or at a modest loss because credit builds customer loyalty to the retailer, thus increasing sales volume, and because a large base of credit extension diversifies the risk, carrying the marginal credit customer. Many retail credit grantors preserve their credit customer base by not accepting credit cards issued by others.¹⁷

In contrast to the foregoing statements, the American Bankers Association asserted that:

..., the general effect of EFT will be to reduce the cost and increase the availability of consumer credit. We think that the total effect will be relatively small, but lower-income or higher-risk borrowers may be benefitted to a relatively greater extent than other groups.

¹⁴ See National Consumer Finance Association, "Electronic Funds Transfer Systems," Position Paper (Feb. 23, 1976), p. 6.

¹⁵ See National Retail Merchants Association, *op. cit.*

¹⁶ *Ibid.*, p. 4. This work cites seven studies.

¹⁷ The problem of customer base erosion for retailers attributable to debit cards with (nonclosed) overdraft features is discussed in detail in Stanford Research Institute, "The Impact of EFTS on Non-Depository Institution Consumer Credit" (June 1977). Also see NCEFT, IWD-52.

It seems likely that in the absence of EFT, commercial banks, and especially, credit unions will continue to gain market share in relation to retailers and finance companies. There is little or no reason to believe that EFT will substantially alter such trends. Entry of savings and loan associations and mutual savings banks into the consumer credit field has far greater potential for affecting the market shares of existing suppliers of consumer credit.¹⁸

The spectrum of credit risk ranges from low- to high-risk customers. The view expressed in the statements of the National Consumer Finance Association and the National Retail Merchants Association emphasizes that in their lending they are guided by the average exposure to credit losses. They contend that if depository institutions attract the preferred or low-risk customers, the cross-subsidization of high-risk borrowers will be diminished to the point at which the provision of credit services by finance companies and retailers will be significantly reduced. This potential exists for all credit grantors who treat their loan recipients as a homogeneous group. If they were to lose a significant portion of their customers, they would have less credit volume over which to spread their fixed costs, making the operation less cost effective. In addition, if they were to lose a significant number of their preferred credit customers, they would be much less able to carry the marginal credit customers.

Preferred credit customers are likely to obtain from their new source of credit a more favorable interest rate or terms or greater convenience in exercising credit. The result is that some marginal

customers will be "picked up" by another credit source but at the cost of higher rates of interest, less favorable terms, reduced convenience, and a greater investment in time in arranging financing and making purchases.¹⁹ Further, as legal ceilings on interest rates limit the ability of the marketplace to extend credit, some high-risk credit customers may not be able to locate a substitute source of credit.

These lenders are largely subject to State legal ceilings on finance charges and do not vary their interest rate charges by risk categories. They offer credit to all of their credit customers at the same interest rate. In these circumstances, the volume of credit offered becomes fixed by the aggregate loss experience. The Commission did not address the question of whether these practices are in the public interest, but only noted how the systems function.

Empirical evidence to date is insufficient to corroborate or refute the contentions by the National Consumer Finance Association, the National Retail Merchants Association, and the American Bankers Association. Perhaps these conflicting views are reconcilable on this basis: some depository institutions are likely to use the efficiencies occasioned by EFT to offer credit lines to more consumers than they have accommodated in the past. But the depository institutions, because of risk and other considerations are

¹⁸ See American Bankers Association, *op. cit.*, p. 5.

¹⁹ Stanford Research Institute, *op. cit.*

not likely to displace finance companies and retail credit grantors.

If EFT were to impact adversely on the ability of certain types of credit grantors to serve particular sectors of the consumer market, such credit grantors would lose market shares, and some of the consumers served by them might also be adversely affected. In general, the consumers most likely to be deprived of alternative credit sources are the less affluent. Their sources of credit are primarily the retailers and the finance companies.

EFT probably will affect the shares of the credit markets held by the several types of credit grantors. The Commission, however, was not able to draw firm conclusions with respect to the magnitude or the distribution of these shifts in shares. Ultimately, competitive market forces should determine market shares. The problems faced by competitors are a secondary concern, so long as there is not a general exclusion of the less affluent from competitively supplied credit sources.

FURTHER CONSIDERATIONS AND RECOMMENDATIONS

Concern about the potential impact of EFT on consumers prompted the Commission to pursue further the possibilities that EFT might adversely impact some credit grantors.

Some institutions are limited by law as to the financial services they may offer to their customers. For example, non-depository institutions may offer their customers credit, but they are forbidden from offering depository accounts and debiting services.

EFT will not enable them to issue a debit or multi-purpose card to compete directly against the wider range of financial services that depository institutions are permitted to offer. With a restricted scope of financial services, it is possible that some non-depository institutions may be unable to generate the high volume of EFT transactions necessary to achieve economies of scale for their own credit operations.

The Commission's analysis raised some concerns with respect to the impact of EFT on the future competitive ability of (1) small volume institutions, (2) finance companies and other credit grantors that are not able to offer revolving credit at POS, and (3) retail credit grantors and other organizations that already have EFT-type credit systems operating in-house.

Small-Volume Institutions

Data indicate that EFT systems are characterized by large economies of scale.²⁰ For example, the average cost per transaction appears to decline continually over very large ranges of output.

²⁰See "An Overview of the Economic Characteristics of Electronic Funds Transfer Systems," in NCEFT, "The Economics of Electronic Funds Transfer Systems: An Analysis of Data Derived from Twenty Case Studies," IWD-43 (May 1977), pp. 21-26. See also David A. Walker, Financial and Economic Research Section, Division of Research, FDIC, "Economies of Scale in Electronic Funds Transfer Systems," Working Paper No. 76-5 (1976), pp. 17-19.

As small businesses, credit grantors with a relatively small customer base may not by themselves be able to achieve the lowest EFT costs for EFT terminals in the acquisition of funds or the extension of credit.

Credit grantors generally attempt to maximize the benefits that go with a high volume of transactions in a decreasing cost system, both by increasing their customer base in terms of cards outstanding and by expanding the number of service functions that can be executed per card.²¹ Lowering the cost of credit will tend to lower the break-even point for the size of loans offered and provide better data on which to base credit-risk decisions about individuals.²² By increasing the range of functions that can be executed with any given card, transaction volume can also be increased. It must be borne in mind, however, that debit cards can only be issued by institutions in which the cardholder has a deposit account.

If the impact of EFT on the total demand and supply of credit is minor, any credit grantor in a given market would be able to increase its customer base only by taking market share from its credit granting competitors. To the extent that one institution is successful in eroding the customer base of its competitors by exploiting EFT economies of scale, other credit grantors may be forced into a lower volume, higher cost situation that increases their per-unit cost per credit extension.

A remedy for this type of potential competitive imbalance may be found in sharing and access to EFT systems. *The Commission's recommendations as to the sharing of and access to EFT systems should be enacted*

*into law.*²³ (20-0-0) Small-volume institutions may share EFT systems or establish consortia, perhaps utilizing their established correspondent relationships, to combine their EFT transactions with the volumes of other institutions, unless such sharing contracts would result in a violation of the anti-trust laws. Small-volume institutions may thereby attain the favorable prices or economies of scale that large-volume institutions will enjoy.

²¹*In recognition of the cost-effectiveness of the multipurpose card the American Bankers Association stated that "the more favorable [EFT] system for reduction of costs would be one involving a debit card with credit extension features." See American Bankers Association, op. cit., p. 5.*

²²*Arthur D. Little, The Consequences of Electronic Funds Transfer--A Technology Assessment of Movement Toward a Less Cash/Less Check Society (Cambridge, Mass., June 1975), p. 224. Also, "as packages approach completeness in the sense of covering all the major transactions of the customer, the information component rises sharply in value, to the household and to the institution. This will put a premium on consolidating accounts within a single institution that will be only partly offset by the declining cost of transferring funds between institutions. The institution that cannot offer a complete package will be further disadvantaged." See Jack M. Guttentag and John Mason, "The Impact of EFT on Non-Consumer Credit Markets," in NCEFT, IWD-51, pp. 10-11.*

²³*See Chapter 6, "Sharing."*

Revolving Credit

The Commission observed that even without EFT, commercial banks, retailers, and certain other credit grantors are moving rapidly in the direction of revolving credit. Retailers have long been a major factor in this market although their share of market has been decreasing. The market share of banks has been increasing. Other credit grantors have been a minor factor in revolving credit. Revolving credit is becoming progressively more important to consumers and to the credit grantors.²⁴ As stated above, fully one-line EFT systems at the point of sale offer the potential for significant advantages for the credit grantor and the consumer.²⁵

Thus, one of the important results of widespread EFT in the credit market may be to enable a broader range of credit grantors to offer revolving credit without increasing their risk exposure. An implication of such a result is that competition could be enhanced for offering credit services--to the ultimate benefit of consumers.

For this result to come about, however, lenders that do not now extend credit at the point of sale may require some type of access, consistent with privacy safeguards, to the information and transaction processing systems that are implicit in point of sale EFT.

The Commission recommends, therefore, that finance companies and other credit grantors that do not normally offer revolving credit at the point of sale should not be denied by law access to or sharing of point of sale EFT facilities for their authorized lines of credit for loans. (20-0-1)

Retail Credit Grantors

Banks and retail credit grantors share the revolving credit card market today. The use of bank credit cards has tended to decrease the retail credit grantors' share of that market, as indicated in Tables 8.7 and 8.8.

To preserve their credit customer base, which promotes customer loyalty and sales and spreads the risk of extending credit to marginal credit customers,

²⁴*"The future for EFTS within installment lending lies primarily with revolving credit. By its very nature, revolving credit involves repetitive functions in the areas of authorization, processing, transaction processing and monthly billing. It has been demonstrated that these functions can be fulfilled electronically and that, at high transaction volume levels, they can be accomplished at a much lower cost than they are being accomplished today. As volumes increase, cost considerations alone should be enough to force most FSI's (Financial Service Institutions) into integrating EFT provisions into their revolving credit mechanisms." Payment Systems Research Program (PSRP), "EFTS and Consumer Credit Project" (Atlanta, Ga., 1975), pp. 2-3.*

See also Larry R. Shotwell, "Changing Dimensions of the Consumer Lending Environment," A Paper Presented at the Annual Meeting of the Consumer Credit Insurance Association, Innisbrook, Fla., Mar. 29, 1977, pp. 6, 12-14.

²⁵*See the earlier discussion concerning the nature of the impact of EFT.*

many retail credit grantors have maintained a policy of not accepting credit cards issued by a third party. This retail policy would not be affected by EFT-based debit cards that have no overdraft or credit service. The policy would not be affected by third-party credit services if the card employed could be identified as a credit card with no debit capabilities. However, the appearance of EFT cards that provide both a debit and a credit service makes it difficult, if not impossible, for retail credit grantors to exclude third-party credit. When payment is made by a debit card with overdraft, a retail credit grantor will not know whether payment is made by accessing funds on deposit or by an overdraft credit line that places funds in the deposit account. By accepting such debit cards with overdraft privileges, retail credit grantors lose their present opportunity to reject third-party credit. This creates the potential of contributing to the shifting of the retailers' share of the revolving credit card market to banks. Nonetheless, so long as retail customers have the option of using third-party credit or retail credit, this shift is the consequence of competition. As noted above, this becomes a problem for consumers only if, in the process, the less affluent are left without a competitive credit source.

Many retail credit grantors argue that abandoning their independent credit operations would leave many consumers without a credit source. They believe that the third-party credit card industry, because of its structure and its credit standards, will deny credit to some consumers. They are concerned that without their independent retailer credit operations, consumers and retailers would be disadvantaged.²⁶

The issue of whether the retailer's credit operation will be affected by the credit service of an EFT debit card may well be one of cost, convenience, and service features. Because under existing law retailers cannot engage in banking, EFT does not provide them with an opportunity to offer directly money transfer services. EFT may provide retailers, however, with cost-saving advantages by replacing check handling and check losses with a cheaper and more secure EFT system in which: (1) funds are available sooner and with certainty; (2) the cost of counting, reconciliation, and safeguarding coin and cash is reduced; and (3) deposit accounting with banks is

²⁶*"NRMA believes that the trend toward retailers' abandonment of their proprietary credit cards is not in the consumer's best interest. The concentration of consumer credit in financial institutions tends to promote the imposition of higher costs upon retailers and their customers. Without the competitive pressure of retail operated credit plans, there is less incentive for financial institutions to continually strive for the greatest efficiencies and lowest possible operating costs in their credit card plans. Further, as noted, once the retailer gives up the proprietary card, and gears its business to cards issued by financial institutions the ability to bargain over costs effectively disappears. As a 'captive' of third-party cards, the lack of an alternative source of financing credit sales places the small retailer at the mercy of the financial institution." National Retail Merchants Association, op. cit., p. 4. See also National Commission on Consumer Finance, op. cit., pp. 206-207.*

largely electronic and affords a reduction in paperwork.

At present all retailers use bank services to obtain cash in needed denominations, to deposit unneeded cash and to deposit checks for collection. They pay for these banking services with fees, compensating balances, or both. EFT will provide retailers with a third payment alternative--to be paid for as are existing payments services. Retail credit grantors have expressed concern that the costs for this service could exceed present costs for existing payment services. This concern of retailers would be less important, however, if debit items were honored at par or if EFT should reduce the costs of the payments system sufficiently to provide cost advantages to the retailer. If competition between banks and third-party credit grantors is sufficiently vigorous, this should be the market result.

A merchant has a significant advantage in persuading a consumer to use his credit plan: the merchant is present at the point of sale and the competing credit grantor is not. The merchant retains the ability to attract or lose customers by enlarging or limiting their payment alternatives. Also, retail credit cards provide consumers with a stronger position in disputes regarding merchandise and service. Further, the overdraft credit line of the EFT debit card is presently not a direct competitor of retail credit cards: most retail credit cards offer convenience credit or defer finance charges for a period of time, whereas the finance charges for overdraft credit begin upon the activation of the credit line. Finally, retailers do not have the regulatory restrictions that are applicable to depository institutions.

Depository institutions, especially banks, appear to have at least two major competitive advantages that retail credit grantors lack. First, a depository institution uniquely generates and has at its disposal detailed information regarding its depositors' financial status, including transactional information about deposits, debit transactions, and credit extensions. Although it is not present practice, some of this information can be assembled to assess credit-worthiness and risk of default. Privacy concepts restrict the disclosure of this transactional information to other credit grantors.²⁷

²⁷ *The potential attractiveness of the multipurpose card to consumers has been explained by one authority as follows: "One would believe that customers with debit cards and overdraft limits would soon note any discrepancy between the overdraft rate (commonly 18 percent APR [annual percentage rate] on balances up to \$500, and 12 percent APR on the portion of balances over \$500). The response among experienced card users would be to use the credit card free period and repay, one month later, with the overdraft. The bank credit card, and other credit cards, could be held as supplementary, higher-cost credit lines to be utilized when the lower-cost overdraft limit was reached. Such a response would lessen the profitability of credit card use and lead to a combined debit-credit card with an overdraft line would give the consumer one card to make choices which are available in any event." Robert P. Shay, op. cit., pp. 19-20. See also American Banking Assoc., op. cit., p. 3, stating "The more favorable system for reduction of costs would be one involving a debit card with credit extension features."*

Second, banking law prohibits retail credit grantors from offering consumers depository accounts. Therefore, retailers may not issue a combination debit-credit card that competes directly with the cards issued by depository institutions.

EFT may also eliminate for banks the present paperwork burden of processing checks, but it may not alleviate the paperwork burden of retailers to the same degree. Retail sales paid by cash or check require only a simple sales slip; sales paid by debit cards will require an audit trail because a consumer may challenge the accuracy of a debit item. To prove that a debit item is proper, either at law or for good customer relations, a retailer will probably generate a copy of the sales record similar to that for a credit sale and find it necessary to search his files for the record to prove that the debit was proper.

The Commission recognized that many retailers will not be inclined to accept EFT multipurpose cards without assurances that they have control over the functions that the cards perform on their premises. The law requires only the acceptance of cash in payment of obligations. Payment for all other transactions services is a matter of negotiation between the consumer and the retailer. These include the payment services of check and EFT debit and other services, such as retail or third-party credit. Each service performed by an EFT card may require the retailer to pay a different fee or bear a different legal risk or obligation. So long as an overdraft accommodation bears for the retailer the same costs and legal obligations as a debit service, retailers are not disadvantaged. But for at least the purposes of controlling these finances and accommodating

merchandise returns and legal obligations, merchants need to know whether the consumer who tenders a multi-purpose card is using a credit service

The retailer's participation in EFT will be grounded on a contract he negotiates with one or more depository institutions that issue EFT-based cards. In locations where bank competition is not vigorous, small retailers particularly may lack the bargaining power to obtain reasonable contract terms from card issuers.

With all of the foregoing concerns in mind, the Commission recommends that law should not limit the right of merchants to select those transaction services that are honored on their premises. Furthermore, the Commission recommends that law should prohibit a vendor or lessor of EFT systems or services from making as a condition of the sale or lease of one system or service the sale or lease of another system or service, where the same system or service is not available independently from another vendor or lessor. (21-0-1)

One way for a vendor or lessor to comply with this provision is to issue two separate cards: a debit card that activates or provides access to a depository account and related overdraft, and a credit card that activates or provides access to a separate line-of-credit loan that functions independently of a depository account. Other ways to comply with this provision may be technically available or may be developed. Technology will permit point-of-sale terminals to be programmed to honor only those payment methods activated by a multipurpose card that the retailers or payee has agreed with the card-issuing institution to accept.

The Commission's recommendation regarding the packaging of payment services with a multipurpose card is grounded on antitrust principles and would not prohibit per se such tie-in or packaging arrangements. The present law is that a tie-in is illegal if the seller possesses appreciable market power and the tie-in affects more than a de minimis amount of commerce. Only if a dominant vendor or lessor or if all vendors or lessors in a market offer these services in a package would this recommendation prohibit a tie-in. If one or more vendors or lessors make these several services available as separate offerings, the other vendors or lessors may then restrict their offering of these services to packaged tie-ins, so long as they are not dominant in the market.

HOUSING CREDIT

Data in Table 8.2 show that at the end of 1976, home mortgages accounted for approximately 60 percent of the total consumer liabilities (\$540.3 billion out of \$890.4 billion).

The Commission's investigation showed that the potential of EFT to impact directly on credit is limited to the consumer credit market. Other credit markets would be affected only indirectly, if at all. To the extent that EFT reduces the cost of consumer credit, the total interest charged on credit would decline. With an otherwise fixed supply of credit, "a reduction in the cost of supplying consumer credit will cause financial intermediaries to rearrange their portfolios, holding (relatively) more of their assets in consumer credit and less in the form of mortgages and bonds."²⁸

The Commission found that the percentage of financing shifted by credit grantors from home mortgages to consumer credit, because of EFT, is likely to be negligible. Factors such as "improved and cheaper consumer durables" and "much greater inflation in house prices than in prices of most other goods and services" are of greater concern in diverting expenditures from housing than is the impact of EFT.²⁹

However, EFT has a strong potential, primarily because of customer convenience, to attract consumers and their deposits to institutions that offer EFT services. To the extent that thrift institutions are denied access to EFT services, they may be disadvantaged in their ability to attract deposits. A loss of deposits would reduce the ability of thrift institutions to supply the credit for housing.

The Commission therefore recommends that Congress monitor the impact of EFT on the availability of housing credit. (19-0-0)

COMPETITION

The foregoing recommendations will enable credit grantors to compete vigorously and on a more equal basis for their respective share of the consumer credit market and to serve their respective customers. Particularly in view of the significant changes in

²⁸ Guttentag and Mason, NCEFT, IWD-51.

²⁹ *Ibid.*, p. 8. See also Dunkelberg and Umbeck, NCEFT, IWD-51, pp. 36-37.

costs that will occur as EFT systems develop toward full capacity, competition remains the best arbiter for allocating the costs and benefits of this new system and determining who pays whom in the triangular relationship of the consumer, non-depository institution, and depository institution.³⁰

The Commission, therefore, recommends that the price of EFT services should be determined, not by law or regulation, but by the marketplace. (21-1-1)

EFT is now in its early stages of development and the impact of EFT upon the credit market and consumers cannot be determined with certainty. *The Commission, therefore, recommends that Congress monitor the impact of EFT on the availability of credit, particularly to the less affluent consumer. (19-0-0)*

³⁰ *It is likely that bank card systems will prefer a pricing system based on the value of the transaction, as bank credit cards are priced today. On the other hand, it is likely that consumers and retailers will prefer a pricing based on the number of units of transactions, as checks are priced today. The resolution of this debate should be left to the marketplace.*



Chapter 9

Cost Analysis of EFT

Early in its deliberations, the Commission became aware that the scarcity of reliable empirical data on the cost of EFT services might hamper its work, both in understanding the nature and implications of EFT and in developing policy recommendations. For this reason, the Commission established a cost analysis program to obtain data and to analyze the economics of EFT. The program was designed to meet several specific objectives. First, the Commission sought to investigate the validity of the concerns expressed by some consumers and consumer representatives that the development of EFT systems would increase substantially the cost of payments transactions.

Second, the Commission realized that an understanding of the economics of EFT would provide one means of gauging the immediacy of the problems and challenges posed by EFT. That is, if entry and operating costs for EFT were found to be quite low, especially relative to cost estimates made in the 1960's, then it might be reasonable to expect that EFT developments would occur at a more rapid pace than anticipated earlier. Thus, a cost study was

considered useful in advising the Congress of the urgency of the Commission's recommendations.

Finally, the Commission anticipated that the cost analysis program might shed light on how competition and the market structure of the financial industry might be affected by EFT. The importance of this objective is that the Commission was directed by its enabling legislation to ascertain, if possible, the extent to which EFT has the potential to affect financial industry structure and performance.

THE COST ANALYSIS PROGRAM

Method and Approach

The cost analysis program developed information from three sources: published and unpublished studies available in the public domain; a Commission-sponsored empirical study of the start-up and operating costs and the benefits realized in 20 operational or planned EFT systems; and submissions by Federal agencies,

trade associations, individuals, and business firms. Although the literature and the external submissions contain a wealth of theoretical analysis of the costs and benefits of EFT, very little empirical investigation or verification has been undertaken. The Commission's survey of 20 EFT projects in the private sector was intended to provide the empirical framework needed to evaluate earlier studies.

Limitations

It is important to recognize that analysis of the economics of EFT at this stage in its evolution is subject to the following limitations. These limitations apply to the Commission's study as well.

- Aggregate cost comparisons between the current payments system and a fully developed EFT payments mechanism are speculative. Legitimate differences of opinion exist as to the nature and magnitude of the costs incurred in the existing mechanism. (Estimates range from \$10 billion to \$20 billion per year.) Furthermore, there is little agreement about what is the appropriate model of the EFT environment of the future to use in such comparisons.
- There is no general agreement on the relationship between marginal and average costs from check processing. Thus there is controversy over the level of short-run cost reduction that would result from converting check payments to EFT transactions.
- At this stage in its evolution, EFT is not characterized by a "typical" technological configuration. Except for the automated clearing houses (ACHs), EFT systems are largely experimental and differ in significant ways from both predecessors and competitors. It could be inappropriate, therefore, to ascribe to EFT generally the cost or benefit levels that characterize existing systems.
- If EFT is to survive in the marketplace it may require a substantial investment in marketing and education. Therefore, a study limited to operating cost characteristics may lead to underestimation of the cost of developing viable systems, at least in the short run.
- The electronics and communications industries that supply the means of providing EFT services are in a dynamic phase of technological development and application that will quite likely result in substantially lower costs in the future. Therefore, current costs may not be an accurate gauge of future costs.
- Many of the expected or alleged benefits of EFT are of a nature that defies quantitative measurement.

FINDINGS AND CONCLUSIONS

Level of Costs

Much of the literature on the economics of EFT developed over the past decade suggests that the cost of EFT transactions at the point of sale (POS) and at automated teller machines (ATMs) will be lower than the cost of corresponding transactions in the checking system if the EFT systems can achieve substantial volume. Such estimates, however, were derived solely from engineering and feasibility studies, and had not been tested in application. The Commission's empirical study, which provided a basis for testing these conclusions in a market context, found no evidence that contradicted these conclusions.¹

In ACH applications, the U.S. Department of the Treasury has determined from experience that the cost of preparing a payment for distribution is 50 percent less for automated payments than for checks.² Further, there are resource savings in distributing payments electronically rather than by mail. The staff of the Federal Reserve Board has recently completed a study that identified the operations that are affected by the conversion of recurring Government payments to an electronic mode. The study demonstrated that cost-reducing factors outnumber cost-increasing factors by a ratio of 2.5:1.³

ACH processing of payments also provides identifiable potential savings for recipient institutions compared with the receipt of individual deposits through a teller operation.⁴ Although the ability of individual institutions to capture savings may

vary, depending on volumes and processing methodology, it appears that the potential for significant resource savings in ACH applications is substantial.

¹For a thorough review of this subject, see National Commission on Electronic Fund Transfers, "The Economics of Electronic Funds Transfer Systems: A Survey of Cost-Benefit Analysis," Internal Working Document IWD-25 (October 1976); NCEFT, "The Economics of Electronic Funds Transfer Systems: An Analysis of Data Derived from Twenty Case Studies," IWD-43 (May 1977); and NCEFT, "The Economics of Electronic Funds Transfer Systems: Summary Comments and Two Model Case Studies--Program Contractor's Final Report to the National Commission on Electronic Fund Transfers," IWD-47 (June 1977).

²Division of Federal Reserve Bank Operations, Board of Governors of the Federal Reserve System, "Cost, Savings and Benefits of Electronic Government Payments" (unpublished, June 1977).

³*Ibid.* It should be noted that in an informal survey of large and small firms that are using ACH-based direct deposit of payroll, none was able to provide cost and benefit data. The reasons for this were given as: (a) the motivation for the program was not related to costs, and (b) the total cost or benefit involved was not large relative to other expenses of the firm.

⁴Division of Federal Reserve Bank Operations, Board of Governors of the Federal Reserve System, *op. cit.*

Thus, the Commission found no basis for a belief that transaction costs would increase for users of the payments mechanism if a substantial portion of payments that are now made by check were made through an electronic mechanism. In fact, the Commission found that, over time and with sufficient consumer acceptance and transaction volume, the cost of EFT transactions probably will be lower than those of alternative paper-based systems. Further, the economic literature concerning check processing supports a belief that the unit cost of check processing would not increase significantly as check volume declined during a transitional period.⁵

Immediacy

The financial services industry, particularly the commercial banking industry, has viewed the potential transition to EFT as an evolutionary process. The Commission found no evidence in its cost analysis program to suggest that the pattern of EFT evolution is changing. Specifically, the Commission-sponsored empirical study of POS systems being implemented in 1976 found that these systems exhibited cost characteristics similar to those described in studies done from 1968 to 1972.

This situation, of course, may change dramatically. As previously noted, new technological developments in the electronics and communications field may reduce the cost of EFT systems. To the extent that the evolution of EFT is constrained by such costs, these dynamics may impact on the pattern of EFT evolution. The Commission was well aware, however, that costs are not the only constraint on EFT development.

Policy Implications

The Commission concluded that it would be inappropriate at this time to impose rules or regulations restricting the nature of the development of either POS-oriented or ACH-related EFT systems, based solely or primarily on the cost of market entry or the cost of operation of such systems. This conclusion is founded on the considerations discussed below.

Recent history has shown that the costs both of acquisition and of operation of virtually every component of EFT systems are changing rapidly. In most cases cost reductions are observed. Regulations and restrictions based on 1977 cost characteristics would, more likely than not, be inappropriate in the near future.

Because EFT and related services using similar systems are relatively new to the marketplace, existing evidence does not constitute an adequate basis for long-term policy conclusions. For example, from the evidence gathered by the Commission, it appears that no single EFT system is currently operating in this country at a volume that approximates its operating capacity or its least-cost potential. Although it is possible to speculate about the nature of cost functions at higher volumes of operation, it does not seem reasonable to make

⁵ See, for example, Neil B. Murphy, "A Re-estimate of the Benston-Bell-Murphy Cost Function for Large Samples with Greater Size and Geographic Dispersion," Journal of Financial and Quantitative Analysis (December 1972).

important policy judgments from this limited perspective.

Although both the literature on the subject and the Commission-sponsored survey demonstrated that the entry cost for EFT systems, especially at the point of sale, is not low in terms of real capital requirements, in many cases the requirements can be met partially or wholly through utilization of excess capacity of computer equipment acquired for other purposes. Thus, although real capital start-up costs or investment requirements may range in value from several hundred thousand dollars to several million dollars, depending on the size of the application, the incremental out-of-pocket impact on individual institutions, on average, may not be prohibitive.

Further, EFT systems currently in use by financial institutions in the United States exhibit a considerable range of approaches, designs, and service offerings--diversity that is not surprising for such a new industry. It is not apparent which, if any, of the current approaches will prove superior either in the marketplace or in terms of cost effectiveness. At this time regulation based on current cost characteristics may tend to stifle innovation and experimentation.

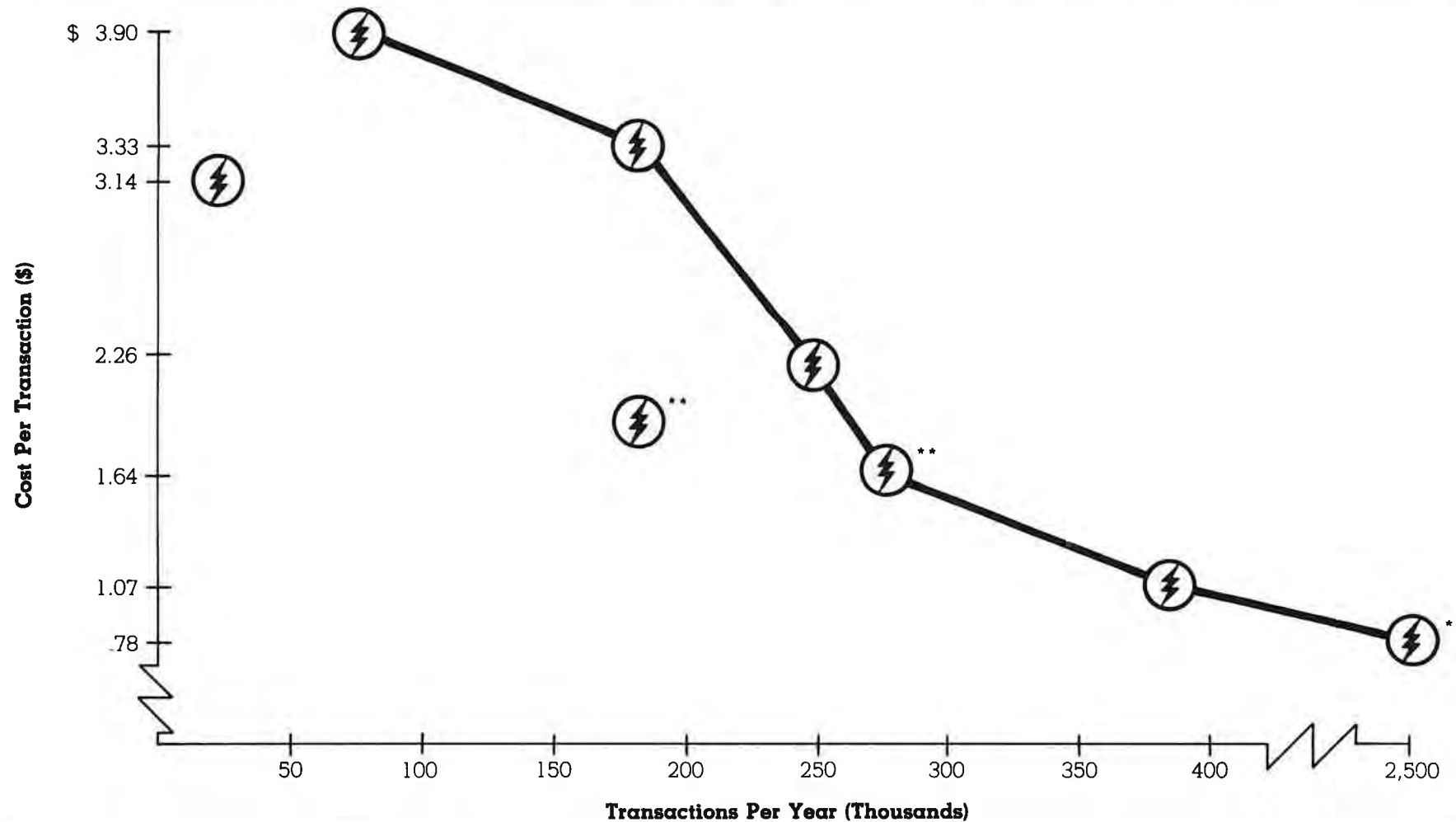
Finally, there are a number of important issues affecting the cost of providing EFT services that have yet to be resolved. One such issue is the nature and medium of interchange and settlement among POS switches. For example, the question of whether merchants will receive funds represented in an EFT transaction immediately or after a delay--and how much of a delay--is an issue whose resolution will

involve a wide range of cost considerations. Such questions can undoubtedly be resolved in the marketplace and, in the Commission's view, it would be inappropriate to direct such a solution by restrictive interference.

The Commission recognized that there is some risk in the conclusion that it would be inappropriate at this time to impose rules or regulations restricting the nature of the development of EFT based solely or primarily on cost considerations. Economic logic, published engineering and feasibility studies, and the Commission survey have indicated that unit transaction costs decline steadily over both volume of transactions and network size for POS systems providing similar services.

Figures 9.1 and 9.2, which were derived from the Commission-sponsored empirical study, suggest that costs per transaction for full-service and check authorization/guarantee systems tend to decrease as the number of transactions per year increases.⁶ Figures 9.3 and 9.4 indicate that total expenses per terminal tend to decrease as the number of terminals increases. Because the

⁶ Check authorization/guarantee systems are defined as those systems that were designed and implemented primarily to offer a check authorization/guarantee service. Full-service systems are defined as those systems that were designed and implemented to offer a range of services such as check authorization/guarantee, deposits, withdrawals, account inquiries and transfers, and third-party payments. ATM systems have been included in the full-service definition.

Figure 9.1.**Cost Per Transaction in Full Service Systems**

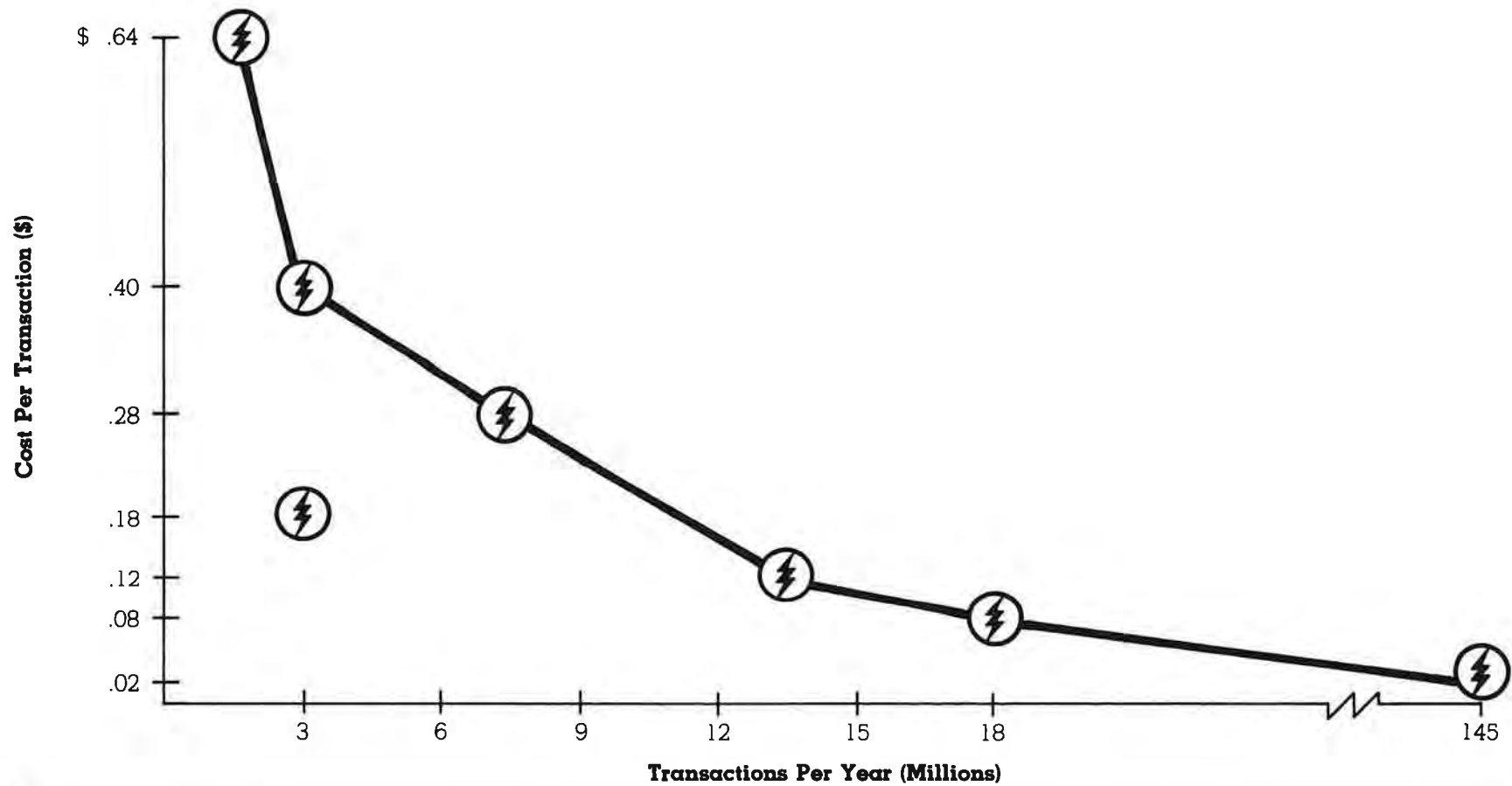
⚡ = POS

⚡* = ATM Only

⚡** = POS/Cash Dispenser

Source: NCEFT, IWD-43 (May 1977)

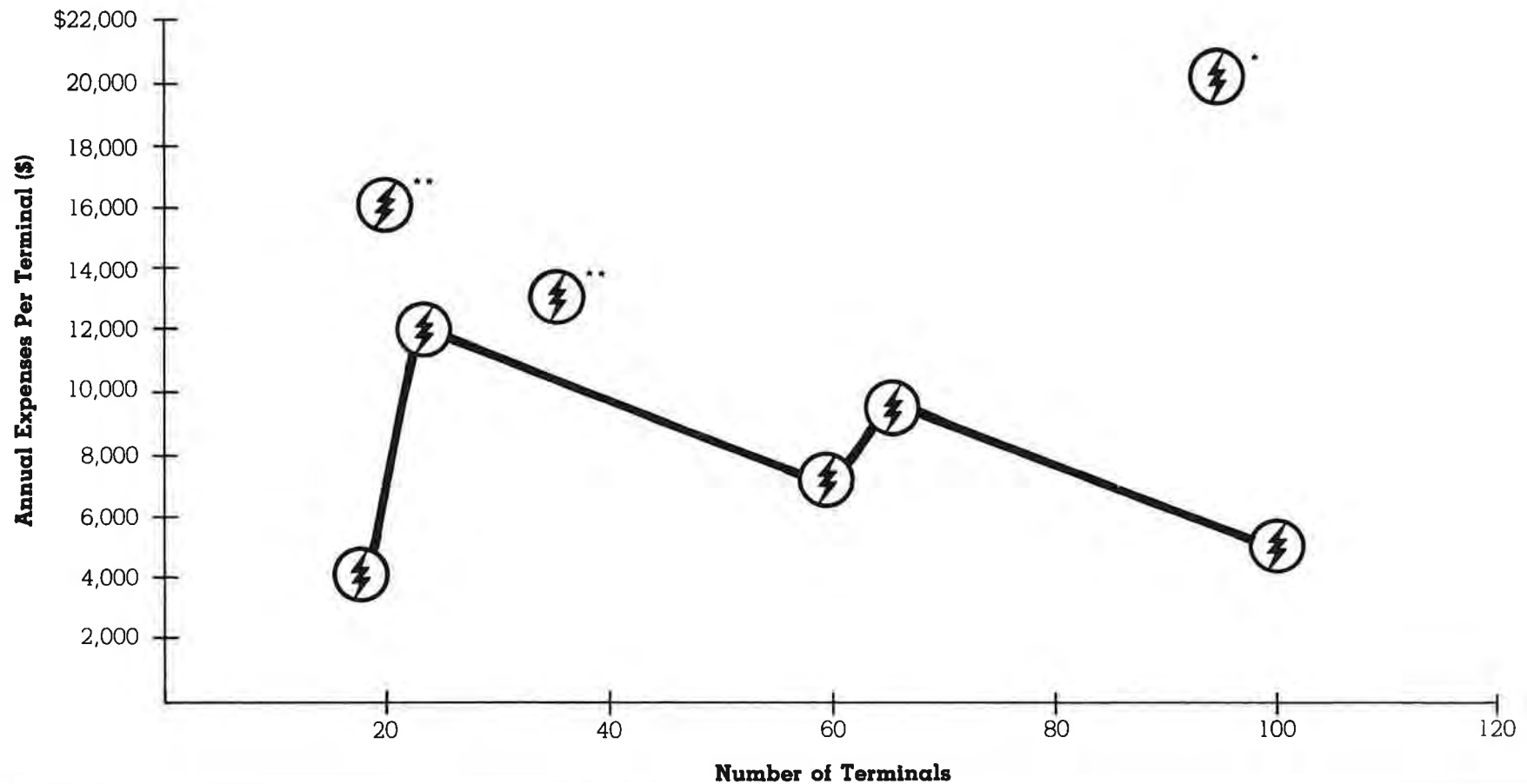
Figure 9.2. Cost Per Transaction in Check Authorization/Guarantee Systems



⊕ = POS

Source: NCEFT, IWD-43 (May 1977).

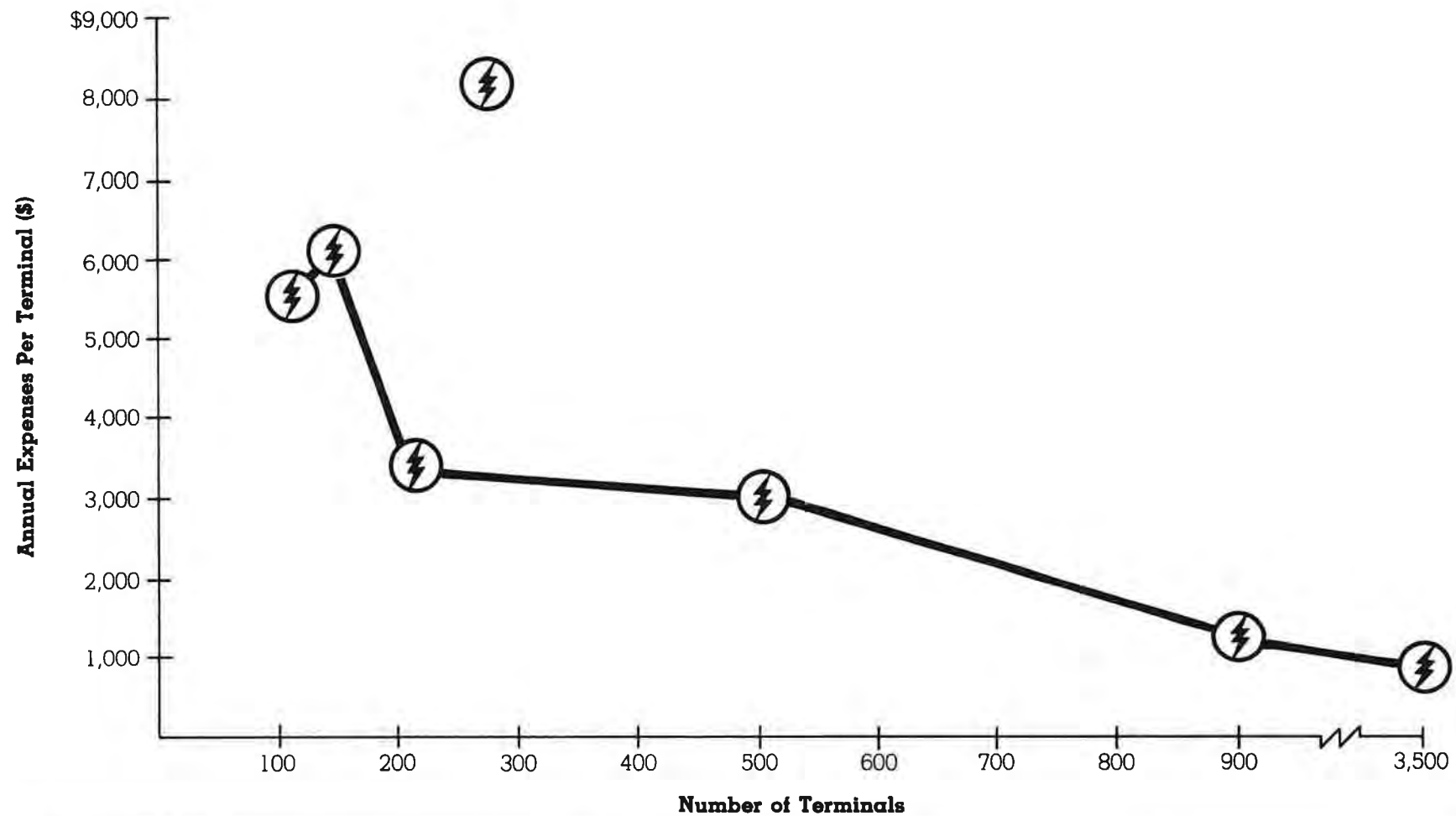
Figure 9.3. Total Annual Expenses Per Terminal in Full Service Systems



⚡ = POS
 ⚡* = ATM Only
 ⚡** = POS/Cash Dispenser
 Source: NCEFT, IWD-43 (May 1977).

Figure 9.4

Total Annual Expenses Per Terminal in Check Authorization/Guarantee Systems



⊖=POS

Source: NCEFT, IWD-43 (May 1977).

number of transactions in a system tends to be directly associated with the number of terminals, these exhibits do not show the exact effects on costs of changes in the volume of transactions for a given system of terminals. Neither do they show clearly the effects on costs of interrelated changes in transaction volumes and associated changes in the number of terminals. Over the ranges shown, however, it appears that the larger systems generally have lower costs than smaller systems, partly because of more transactions per terminal and partly because, for a fixed number of transactions per terminal, there are still lower expenses per terminal as the number of the terminals in the system increases.

The importance of such decreasing costs to public policy questions is related to the size of the market and the range of volumes over which costs continue to decline relative to market size. At this time there are no useful data for estimating the limits of scale economies in POS applications.

If POS systems demonstrate economies of scale as system size increases, EFT has the potential to have a significant effect on market shares and the structure of the retail financial services industry. Larger systems will tend to have lower costs and, hence, the ability to charge lower prices than the smaller ones. The likelihood of a single system achieving uniquely advantageous cost levels in a single market is somewhat uncertain, however, because of the dynamics of the supplier industry discussed above and because there may be limits to scale economies. Also, the likelihood of major market share impacts will probably be kept to a

minimum because of the current trend toward sharing of POS systems.

Because of potential risks, the Commission recommends that Federal and State depository institution regulatory agencies should establish methods and procedures for monitoring developments in the EFT service marketplace, particularly with respect to market share. Such agencies should act expeditiously within the framework of existing law and regulation to protect the public interest.⁷ The Congress should be aware of the possibility that, in the future, legislation affecting the relationship between EFT and the structure of the financial services industry may be desirable.
(21-0-0)

Because the Commission focused its attention on the most immediate policy issues related to EFT, the cost analysis program was designed to analyze microlevel rather than macrolevel implications. Several important issues relating to the long-term societal implications of the costs and benefits of EFT must be addressed in the future.

Among such issues are the costs related to illegal activities--both the cost of the losses sustained and that of law enforcement activities. For example, counterfeiting of currency, forgery of checks, and theft of cash would no longer be problems in a total EFT environment. As pointed out in Chapter 12, "Security in EFT," however,

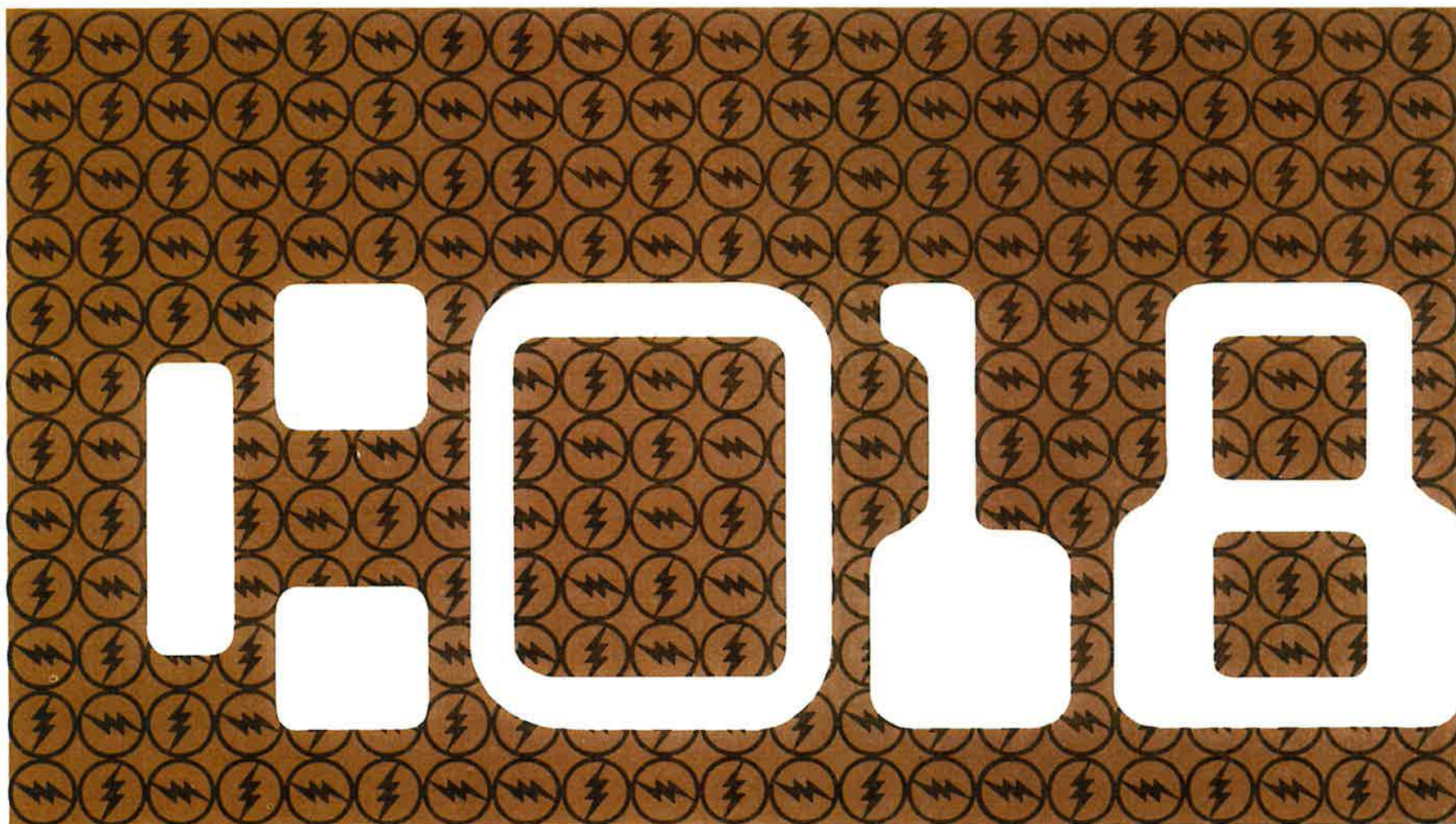
⁷ It should be noted that essentially the same recommendation is made in Chapter 7, "The Impact of EFT on the Competition for Deposits."

there will be new risks, such as the risks of computer-based fraud and theft. Insurance against these crimes will surely generate costs.

Other areas in which the longer term impacts of EFT may result in substantial aggregate efficiencies include resource savings in functions such as transporting, receiving, counting, accounting for and auditing cash transactions, and the potential for increased output per paid work hour if EFT systems reduce the need for employees to conduct personal banking during work hours. Such benefits may be a long time in coming, if they are, in fact, realized at all, but they are indicative of the types of societal benefits that may be precipitated by EFT systems.

Technology and EFT

Part IV





Chapter 10

Competition Among Suppliers

Uncertainties in regulations, standards, and other factors have tended to retard EFT technological advances. These uncertainties may artificially hold back innovation, add unnecessary costs to EFT systems, and limit the variety and scope of EFT offerings. Future EFT development is likely to be fragmented by geographical area and more costly if these uncertainties continue. Allegations also have been made that the present market structure has created an anti-competitive environment that could present artificial obstacles to EFT development.¹

The Commission, therefore, found it necessary to examine the alternatives available to improve competition in the two industries that are competing for the EFT market: the unregulated data processing industry (consisting of both equipment manufacturers and service bureaus) and the regulated communications industry. This chapter presents the results of the Commission's examination.

MARKET STRUCTURE

Twenty-five years ago it was relatively easy to differentiate between the data processing industry and the telecommunications industry. The data processing industry supplied hardware, such as a central processing unit (CPU), and various peripheral items of equipment. These devices were collocated and performed data processing in a batch mode; that is, work was physically brought to the computer room by the user. Some manufacturers also provided data processing services through wholly owned service bureaus.

¹ See National Commission on Electronic Fund Transfers, "Summary of Suppliers Questionnaire Responses," Internal Working Document IWD-35 (October 1976), and NCEFT, "EFT Technology--Present and Future, Parts I, II, and III, Testimony Presented to the National Commission on Electronic Fund Transfers, December 14-16, 1976," Internal Working Documents IWD-64, IWD-65, and IWD-66 (October 1977).

Even then, the basic technology used by both the data processing industry and the telecommunications industry--relays and vacuum tube switches--was the same. Engineers, called logic designers, designed both the central circuit switches used by the common carriers (telephone companies) and the CPUs and peripheral equipment used by the computer industry.

The primary difference between the two industries was not technology but function. The common carriers traditionally provided the wherewithal for communications and the computer manufacturers provided data processing equipment. But one other major difference existed--the communications common carrier industry was regulated as to entry, exit, and pricing, whereas the data processing industry was not.

Communications common carriers were brought under regulation by the Federal Communications Commission (FCC) under the Communication Act of 1934 primarily because the industry then was deemed to have the characteristics of a natural monopoly and, therefore, subject to regulation for the public good.²

The FCC's jurisdiction was limited to interstate communications; intrastate communications were regulated by State regulatory agencies.

Over the past 25 years there has been a restructuring of both industries through antitrust proceedings, changes in regulatory policy, and rapid technological development.

The initial restructuring took place in 1956 when International Business Machines (IBM), the dominant company in the data processing industry, and American Telephone and Telegraph (AT&T), the dominant company in the telecommunications industry, entered into consent decrees to settle antitrust suits initiated by the U.S. Department of Justice.

²"Natural monopoly occurs when economies of scale are so extensive relative to the size of the market that only one firm can operate efficiently within the bounds of market demand. Remedy by means of the structural modifications intended to create competitive conditions is impossible. Instead, direct regulation, under the rubric of 'public utility' regulation has been utilized." Quoted from Almarin Phillips, Promoting Competition in Regulated Markets (Washington, D.C.: The Brookings Institution, 1975). According to James R. Nelson, "One of the most unfortunate phrases ever introduced into law or economics was the phrase 'natural monopoly.' Every monopoly is a product of public policy. No present monopoly, public or private, can be traced back through history in a pure form [N]atural monopolies in fact originated in response to a belief that some goal, or goals, of public policy would be advanced by encouraging or permitting a monopoly to be formed, and discouraging or forbidding future competition with this monopoly." See Nelson, "The Role of Competition in the Regulated Industries," 11 The Antitrust Bulletin (January-April 1966), pp. 1, 3.

The principal provision of IBM's consent decree required the company to operate its data processing service business as a separate subsidiary.³ The principal provision of AT&T's consent decree required it to limit its activities to providing only common carrier communications services.⁴ This provision became one of the principal deterrents to AT&T's entering the data processing marketplace as a supplier.

The decade following 1956 was marked by rapid technological growth in both the data processing and communications industries. The advent of the transistor drastically changed the size and speed of computers and communications switches. The advent of computerized airline reservation systems introduced the era of on-line, real-time data processing and extensive use of computers in telecommunications networks. This increased the difficulty of the FCC in determining which common carrier services and products should be regulated and which should not, culminating in 1966 in the first Computer Inquiry.⁵ Several years later the FCC published rules defining the role of common carriers in data processing.⁶

The last decade has been a period of even more rapid growth and change. Advances in technology (e.g., microprocessors) and data communications (e.g., distributed processing) have caused a further blurring of the distinction between communications and data processing. It is no longer certain which services should be regulated as communications services. For this reason the FCC has reopened the

³*United States v. IBM*, 1956 *Trade Cases*, pp. 68, 245 (S.D.N.Y., 1956) amended, Civil No. 72-344 (S.D.N.Y., 1963 and 1970).

⁴"The defendant AT&T is enjoined and restrained from engaging either directly, or indirectly through its subsidiaries other than through Western and Western's subsidiaries, in any business other than the furnishing of common carrier communications;. . . Western Electric, the manufacturing subsidiary of AT&T, is also enjoined and restrained from engaging either directly or indirectly, in any business not of a character or type engaged in. . . for (the operating) companies of the Bell System. . . ." *U.S. v. Western Electric*, 1956 *Trade Cases*, pp. 68, 246.

⁵"Regulatory and Policy Problems Presented by the Interdependence of Computer and Communication Services and Facilities," 28 FCC 2d. 267 (final decision and order, 1971).

⁶47 CFR (1976 ed.) 64.702. The "computer rules" adopted as a result of the first Computer Inquiry require that communications common carriers offer data processing services only through separate arms-length subsidiaries, modeled after the 1956 IBM consent decree limitation on The Service Bureau Company. See Gilchrist and Wessel, Government Regulation of the Computer Industry (1972). "Arms-length" in this context requires a separate board of directors, books, capitalization, and identifiable payments to the parent corporation for shared

Computer Inquiry.⁷ Nowhere is the problem more evident than in existing and emerging EFT systems.

IBM has been, and is, the defendant in several antitrust proceedings. Some have been initiated by private companies, others by the Department of Justice.⁸ Since the second Department of Justice antitrust suit was filed in 1969, two major companies have abandoned the computer field.⁹ Despite this fact, and despite the problems that have spawned the antitrust litigation, there are more companies competing in the data processing industry today than ever before, primarily because of rapid technological changes.¹⁰

AT&T today is also engaged in both private¹¹ and Government antitrust action.¹² Because of new technology and FCC policy, it is also facing more competition in nonmonopoly service offerings than ever before.

Communications facilities and services are now provided, or may be provided, by a variety of entities: telephone companies,¹³ specialized common carriers that own facilities, and resellers who broker or add value to facilities¹⁴ obtained from other communications common carriers (underlying carriers).¹⁵ While these entities vary greatly in size and services offered, they have one thing in common--regulation. Regulation affects entry into and exit from markets, pricing, an entity's ability to raise money, and in some cases corporate structure.¹⁶ Communications users may provide their own private facilities or may share facilities with

⁶Continued

research and development, marketing, legal services, and lobbying expenses. Provisions of the "final" computer rules, which prohibited dealings between the carrier and its data processing subsidiary, were struck down on appeal. GTE Service Corporation v. FCC, 474, F. 2d. 724 (2d. Cir. 1973).

⁷"In the Matter of Amendment of Section 64.702 of the Commission's Rules and Regulations," 61 FCC 2d. 103 (Aug. 9, 1976). The inquiry was significantly modified by an additional notice 42 F.R. 13029 (Mar. 8, 1977).

⁸U.S. v. IBM, Civil Action No. 69-200 (S.D.N.Y., filed Jan. 17, 1969). The only private suit that proceeded to trial and decision was Telex v. IBM, 510 F. 2d. 894 (10th Cir. 1975), although a settlement was reached prior to Supreme Court consideration of the petition for certiorari.

⁹RCA and General Electric. In addition, Xerox has withdrawn from the complete systems market and now offers only peripherals.

¹⁰For example, one directory of vendors lists 430 companies that offer a wide range of products and services to depository institutions. See Datapro Reports on Banking Automation (1976).

¹¹These cases have been brought by equipment manufacturers, specialized common carriers, radio-telephone carriers, and cable television companies. They charge AT&T with monopolization, predatory

other users. Although these arrangements are not directly regulated as common carrier offerings, they too are affected by regulation.

The last decade has also seen the emergence of consumer oriented EFT systems and services, which are based on data processing and communications technology.

For several years financial and nonfinancial institutions have been installing proprietary EFT systems using both attended and unattended terminals. These systems have been assembled from computer equipment manufactured by both large and small manufacturers. This equipment has been connected using phone lines provided by regulated communications common carriers under existing State and Federal tariffs.

As noted elsewhere in this report, systems are now being developed involving several financial institutions.¹⁷ In some cases these systems are assembled by connecting several proprietary systems of the type outlined above. The mechanism that accomplishes this interconnection is called a switch.

A switch is a computer programmed to route messages to their proper destination. In addition to its communication functions, the switching computer in an EFT system usually performs data processing functions, such as settlement and provision of an audit trail for transactions. It is also possible to construct a system in which the terminals communicate directly with the switch and the switch communicates with the computers of the various depository institutions.

¹¹Continued

pricing practices, and abuse of the regulatory process. Of particular relevance to EFT are the charges made by providers of data transmission and private line services against AT&T. See Wyly Corp. v. American Telephone and Telegraph Company, Civil Action No. 76-1544 (D.D.C., 1976) and MCI v. American Telephone and Telegraph Company, Civil Action No. 74C633 (N.D. Ill, filed Mar. 6, 1974). On the complexity and expense of antitrust litigation generally, see Earl Kintner, An Antitrust Primer, 2d Edition (New York, N.Y.: MacMillan and Co., 1973), p. 138.

¹²The Government antitrust suit seeks divestiture of Western Electric, the AT&T Long Lines Division, and parts of Bell Labs from the parent company. U.S. v. American Telephone and Telegraph Company, Civil Action No. 74-1698 (D.D.C., filed Nov. 20, 1974).

¹³There are 23 Bell operating companies and about 1,600 independent telephone companies. Most are relatively small, although some larger companies are owned by General Telephone and Electric. All of these telephone companies are interconnected for long distance service by AT&T Long Lines.

¹⁴This is a new class of intercity telecommunications suppliers, created by the FCC decision, SCC Services, 29 FCC 2d 870 and 31 FCC 2d 1106 (1971). Affirmed, sub. nom. Washington Utilities and Transportation Commission v. FCC, 513 Fed. 2d 1142 (9th Cir.) cert. denied, 423 U.S. 836 (1975). They build terrestrial or satellite microwave facilities to provide "private line service" to large business

For all configurations, the entire system--consisting of terminals, switch, and depository institution processing centers--can be assembled using equipment obtained from data processing equipment manufacturers and tariffed communications lines provided by regulated carriers.

The equipment for these systems can be procured from one supplier, such as IBM, NCR, or Burroughs, or can be procured from any number of suppliers. The ease with which the latter approach can be pursued depends on the compatibility of the equipment manufactured by the individual suppliers.

It is also possible to assemble an EFT system using terminals and message services provided under tariff by AT&T. AT&T offers terminals that provide EFT services for use in conjunction with the dial network that are tariffed in 48 States. These terminals are called Transaction Telephones. In 1976 AT&T introduced Transaction Network Service (TNS) consisting of a new terminal (Transaction III) and message-switching services. TNS has a terminal communications protocol and polling technique that differs from those currently used by the data processing industry. Initially, other manufacturers had to modify their existing terminals if they wished to be compatible with TNS. But after a year AT&T agreed to support one of the protocols used by the data processing industry.¹⁸

TNS can interface with existing telephone plant and equipment. Therefore Transaction I and II telephones and the dial network can be used in conjunction with TNS. The message switch, however, is

¹⁴Continued

users in competition with AT&T. Among these specialized common carriers are Microwave Communications Inc., Southern Pacific Communications, Inc., and RCA Global Communications.

¹⁵"Resale carrier" is new nomenclature for a company that leases circuits from an "underlying carrier" and adds additional equipment to offer new communications services, such as packet switching for data transmission. Another application has been facsimile transmission of documents and graphic information. These new companies are often called "value-added" carriers. Among the first in this new class of carrier are Telenet and Graphnet. The manner by which these companies are to be regulated, or left alone as shared systems, and the borderline between the two are now a subject of American Telephone and Telegraph v. FCC (No. 77-4057, 2nd Cir.). The case has raised special concerns in the computer industry, which fears that remote data processing services now unregulated may become subject to regulation.

¹⁶See NCEFT, "The Effect of Existing Law and Regulations on the Offering of Telecommunication Services," IWD-45 (May 1977).

¹⁷See Chapter 6, "Sharing."

¹⁸American National Standards Institute (ANSI) specification X3.28-1976. ANSI is the organization through which national consensus standards are developed. Its work is described at greater length in Chapter 11, "Standards for EFT."

self-contained and unique to TNS and does not depend on existing switching equipment in the telephone system. TNS also does not provide settlement or audit trail features.

Other entities in the data processing industry, such as service bureaus, are either providing or capable of providing EFT services in conjunction with financial institutions. Likewise, communications common carriers, other than AT&T, are capable of providing more than just the basic circuits necessary to interconnect EFT equipment.

Changing technology is not only reducing the cost of communications and data processing, but also changing the way in which data communications and data processing are conducted. The net effect on EFT is that some services that are not cost-effective today may be cost-effective tomorrow and that any one of a number of entities may be able to provide EFT services.¹⁹

PROBLEM AREAS

EFT is developing in a market environment in which unregulated data processing companies compete, to a degree, with regulated communications carriers. Thus it is virtually impossible to determine a priori whether an EFT network or service will be subject to both financial and communications regulation and whether the outcome of current litigation may alter the structure of both the data processing and communications industries.

At the Commission's hearings in December 1976,²⁰ many charges were made about anti-competitive practices that arise when an unregulated industry competes with a regulated industry. Although an unregulated industry has advantages such as the freedom of entry and exit from a market and the ability to set prices unilaterally, this is offset by the possibility that the regulated company can cross-subsidize its competitive products or services with profits from its monopoly products and services.

According to testimony before the Commission, the competitive products and services could actually be priced below cost by the regulated company until the competitors' products and services disappear from the marketplace. At that point, increased tariffs could be sought that would reflect costs and maximize the rate of return.

Representatives of the data processing industry have alleged that other predatory marketing practices could be used by common carriers to enhance their EFT offerings. Since common carriers supply the underlying circuits that financial institutions and others must use to interconnect the equipment sold and leased by computer equipment manufacturers to

¹⁹See Chapter 6, "Sharing," and Chapter 9, "Cost Analysis of EFT," for additional information on these points.

²⁰NCEFT, IWD-64, IWD-65, and IWD-66.

create EFT networks, the common carriers could adversely price or limit the availability of those circuits.²¹

It has also been alleged that there are inequities in the depreciation schedules imposed by the regulators of common carriers that result in artificially low tariffs for products and services competitive with those offered by the data processing industry. Further, it has been alleged that AT&T is packaging its monopoly services with their competitive EFT offerings and are including data processing as part of their tariffed offerings (in violation of the Consent Decree).

Another problem brought before the Commission was the ability of the dominant suppliers in the data processing and communications industries to create standards outside the normal standards-setting process for some of the essential elements of an EFT system such as equipment interfaces and communications protocols.²² By introducing an internal company standard into their product line or service or by suddenly changing specifications, they force competitors to develop compatible equipment in order to remain competitive. This practice is known as creating de facto standards.

The standards-setting issue presents a difficult problem. At present there are few universally accepted standards for the various elements of EFT. Whether these standards should evolve through the voluntary standards-making process, be determined by dominant companies in the market, or be mandated by Government remains an important question of public policy. The clear consensus of witnesses at the

Commission's hearings was that well thought-out, timely standards stimulate competition. Many witnesses expressed concern, however, that the practice of creating de facto standards restricts competition in several ways.

First, the creator of the de facto standard achieves a time advantage in the marketplace while others develop compatible equipment. For example, companies that manufacture direct replacements for peripheral equipment offered by computer companies need as much as two years to develop and market compatible equipment after a computer company makes changes in specifications. During this period, the original manufacturer enjoys a virtual monopoly, effectively eliminating price or performance competition.

Second, information on the de facto standard may be difficult to obtain or incomplete, thus making it time-consuming and expensive for other manufacturers to develop compatible equipment.

Third, it is difficult for the voluntary standards-setting process to develop an acceptable alternative to the de facto standard.

²¹ Some 30 antitrust suits have been filed against AT&T. Many allege that predatory pricing and refusal to connect circuits have occurred, in violation of antitrust laws.

²² See Chapter 11, "Standards for EFT."

In investigating problems such as these, the Commission uncovered an additional problem involving communications regulation: whether EFT systems will be regulated by communications regulatory agencies. As mentioned earlier,²³ the FCC now regulates communications but not data processing, and communication system resellers but not communication system sharers. The principal criteria for differentiating between resellers and sharers are whether, under present FCC definitions, the service being provided is primarily data processing or primarily communications and whether the entity providing the service intends to make a profit on that part of the service defined as communications. Therefore, financial institutions that offer EFT services may also find that, under present law, the EFT networks they put together are subject to regulation by State and Federal communications regulatory agencies.

Furthermore, because of the structure of the financial industry and the laws governing it, existing consumer-oriented EFT networks are being assembled on an intrastate basis and therefore have not been subject to examination by the FCC. This is also true of AT&T's TNS.

However, the Commission is recommending that financial institutions be permitted to deploy EFT terminals across State lines and that the consumer be permitted to use his debit card to access his funds anywhere.²⁴ If Congress enacts legislation to that effect, both proprietary and shared systems could become interstate in nature and therefore subject to FCC review and, possibly, to FCC regulation.

POLICY ALTERNATIVES

This section discusses various options that may be chosen to minimize the effect of the above problems on EFT, and to avoid unfair competition between the regulated common carrier and the unregulated equipment supplier.²⁵

Status Quo

One policy alternative is to maintain the status quo. Basically this means that solutions for the various problems brought to the attention of the Commission will be left to present regulatory or anti-trust processes. There is no evidence to indicate that maintaining the status quo will solve any of the forementioned problems in sufficient time to eliminate them as obstacles to the development of EFT systems and services.

²³See NCEFT, IWD-45

²⁴See Chapter 5, "The Branch/Terminal Issue."

²⁵In seeking to determine which policy alternative best suits the developing EFT market, the Commission consulted with nine experts in the communications field and published a "Notice of Inquiry" to gather all relevant comments on the Commission's proposals from interested Government agencies and industry. NCEFT, "Competition Among Vendors," IWD-44 (May 1977), and NCEFT, "Summary of Responses to Notice of Inquiry," IWD-50 (June 1977).

The FCC spent 52 months from the opening of the first Computer Inquiry docket to the publication of its final decision. Six years later the FCC found it necessary to initiate a new Computer Inquiry docket, which is pending. Based on historical evidence, it will be years before a final decision is reached on whether it is even possible to separate data processing from communications.²⁶

There is also historical evidence to indicate that antitrust enforcement may not provide time-effective solutions to competitive problems involving firms with dominant market positions in the computer and communications industries. In a period of technological change, artificial impediments to developing technology, such as the slow and sometimes ineffective formal regulatory processes, are best avoided.

Maintaining the status quo also would preclude AT&T from offering data processing services and equipment. In an area such as EFT, where it is now difficult to separate data processing from communications, AT&T might not be free to enhance TNS or provide it on an interstate basis if the FCC viewed TNS or its enhancements as data processing. The EFT market could be deprived of a significant source of innovation.

EFT systems are still in an early stage. It may later develop that some markets will essentially preclude successful offerings by private enterprise vendors. It is possible, for example, that a single location retail establishment could not be supplied effectively by someone other than a telephone company.

Another drawback to maintaining the status quo is that the Communications Act of 1934 is not relevant to current technology and requires regulation of all communications common carriers--including resellers who construct nothing.

Finally, maintaining the status quo subjects some suppliers to regulation while not imposing the same burden on others.

Increased Regulation

Another policy alternative would be to subject all offerers of EFT services and equipment to Federal communications regulation. This alternative appears to be contrary to the Commission's mandate, but it could resolve some of the problems outlined above.²⁷

²⁶ 28 FCC 2d. 267, 291.

²⁷ "The Commission shall conduct a thorough study and investigation and recommend appropriate administrative action and legislation necessary in connection with the possible development of public or private electronic fund transfer systems, taking into account, among other things--

- (2) the need to . . . assure Government regulation and involvement or participation in a system competitive with the private sector be kept to a minimum . . .
- (8) the implications of such a system expanding . . . into other forms of electronic communications; . . .

Large regulated companies can now seek tariffs on a State-by-State basis. This poses management difficulties for State regulatory agencies that are often ill-equipped to deal with filings of such complexity and magnitude. Federal communications regulation could bring about uniformity of accounting procedures and marketing practices and could mandate communications standards that would foster interchange in EFT systems. Complying with regulation, however, can be expensive for both industry and Government.²⁸ Subjecting emerging EFT systems to communications regulation does not appear to be necessary at this time. Consumer-oriented point-of-sale (POS) systems also have not exhibited the characteristics of a natural monopoly that would call for such regulation.²⁹ Therefore, Federal communications regulation of market structure and competition may cause more problems than it solves.

Minimum Regulation

A final policy alternative is to minimize regulation and to enhance the strengths of the competitive marketplace through legislation. This requires a determination of what is the smallest number of elements of an EFT system that must be regulated.

Elements of an industry that have not been influenced by effective competitive pressures traditionally have been regulated. In the past, this has included local exchange and message toll services (the public dial-up network), as well as local distribution of leased lines. Although these services are generally thought to be a natural monopoly

today, the rapidly changing technology may alter that perception in the future. It is not the mandate of the Commission to question whether leased circuits that are now subject to competition should continue to be regulated. These circuits are the basic infrastructure of EFT systems and thus, should be available under the same terms and conditions to all providers and suppliers of EFT systems.

With regard to terminals, the Commission found no justification for tariffing them at either the

²⁷Continued

(9) the need to protect the legal rights of users and consumers." Pub. L. 93-495, October 1974.

²⁸"Although the total budget of the major regulatory agencies (nearly \$4.7 billion in fiscal year 1975) is small compared with the combined Federal budget (\$235 billion in fiscal year 1975), it does not reflect the costs incurred by private participants in the regulatory process nor the gargantuan costs--and presumably, benefits--imposed on the private sector by agency decisions." William Lilley III and James C. Miller III, "The New Social Regulation," The Public Interest, No. 47 (Spring 1977), p. 49

²⁹A major examination of this subject reached the same conclusion. See William F. Baxter, Paul H. Cootner, and Kenneth E. Scott, Retail Banking in the Electronic Age (Montclair, N.J.: Allanheld, Osmun & Co., 1976), Chapter 6.

State or Federal levels. The intent of this is not to exclude any supplier of EFT-related terminals from access to the market. In general common carriers should be free to compete freely in the development and marketing of terminals.

Therefore the Commission recommends that the public interest would best be served by the participation of all interested parties in the EFT terminal and system marketplace. Artificial barriers to entrance and exit from the market imposed by either State or Federal requirements and procedures should not apply to EFT terminal equipment systems. (Unanimous voice vote in favor, with two abstentions.)

It must still be recognized that these terminals interface with the public network--both dial-up and leased line. Therefore, the terminal equipment must meet the design specifications set forth in regulations to protect the Nation's telephone system. For this purpose the FCC has established a registration program to ensure that equipment interfacing with the public network does not harm the network.³⁰ Consequently, terminals offering EFT services should be certified by the FCC's registration program or be required to interface with the network through a protective device furnished by the carrier.

The Commission recommends that terminals offering EFT services should comply with FCC registration requirements for terminal equipment used in conjunction with the public telephone network. FCC registration furthers the competitive marketplace by allowing connection of registered equipment under

reasonable terms and conditions while protecting the public network from harm. (Unanimous voice vote in favor, with two abstentions.)

EFT systems may also include components such as concentrators, multiplexers, modems, switches, and other equipment necessary for the implementation of any data communications network. As is the case with terminals, some system components are available as tariffed offerings from common carriers or through purchase or lease agreements from other equipment manufacturers. Following the same line of reasoning used for terminals, these system components should not be provided through tariff but should comply with the FCC registration program as necessary.

The Commission recommends that only the underlying communications transmission and distribution (transparent) facilities used with EFT systems should continue to be regulated for as long as is necessary by appropriate State and Federal

³⁰ *The FCC registration program requires the registration of protective circuitry or the complete terminal device with the FCC pursuant to recently adopted standards and procedures. The FCC's registration requirement does not apply to a completely dedicated intrastate private-line system that cannot access any interstate network. FCC jurisdiction in these systems is undergoing scrutiny. See North Carolina v. FCC, 552 F 2d 1036, 4th Circuit (1977), cert. denied (Oct. 3, 1977). See also California PSC v. FCC, D.C. Circuit Court of Appeals (June 20, 1977).*

communications regulatory agencies and only to the extent they are provided by first-level established or specialized common carriers. The classification of EFT systems as "communications common carriers" by either State or Federal regulatory agencies would subject such systems to unnecessary and duplicative regulation. (Unanimous voice vote in favor, with two abstentions.)

It also follows that EFT systems that are composed of the above components should not be regulated by communications regulatory commissions, either State or Federal, because the underlying circuits are already regulated. No one should be restricted from offering such systems. This provision should hold regardless of whether the system falls under the heading of resale or shared as currently defined by the FCC.

The Commission concluded that the FCC, as the regulating body for the common carriers, should make the final decision on the methods used by common carriers to offer EFT services and related terminals on an untariffed basis. At present, the FCC permits common carriers to participate in data processing only through separate arms-length subsidiaries. However, with improved accounting principles, the FCC could determine that terminals and services could be offered on an untariffed basis through the same corporate structure that offers regulated, tariffed communications services and still avoid the cross-subsidy problem.³¹

AT&T presents a special case. The Commission strongly endorses the fundamental principle that EFT should develop in a market environment of free and

open competition and that no company should be precluded from competing fairly. However, as discussed earlier in this chapter, AT&T is restrained by the Consent Decree of 1956 from engaging in any business that is not regulated as a communication service.

As a result, AT&T cannot offer EFT terminals and related services on an unregulated basis either through its operating companies or through a separate data processing subsidiary. This consent decree can only be modified by the court that entered it and only upon petition of one of the parties to the decree.³²

The Department of Justice has stated the opinion that, although the provision of terminal equipment and related services by noncarrier firms should be totally deregulated, a parallel removal from regulation of franchised common carrier-provided equipment should be founded only upon a showing that the public policy purposes of regulation will not be thwarted.³³

³¹*The FCC is developing the Uniform System of Accounting, which is a new accounting guideline. As of Oct. 28, 1977, no docket had been set.*

³²*Modification would require a show of evidence that there has been a significant change in the circumstances that caused the decree to be entered or changes in relevant statutory law.*

³³*"Initial Comments of the United States Department of Justice Before the Federal Communications Commission in the Matter of Amendment of Section*

When AT&T entered into the Consent Decree of 1956, it agreed that all of its offerings to the public should be limited to communications services under Government regulation. The Department of Justice has taken no position on whether the Consent Decree should be reopened at this time and believes that the burden of proof should be on those who advocate change of the Decree.³⁴

Additionally, as indicated earlier, the Department of Justice is now involved in an antitrust suit against the Bell System. The suit is based on allegations that AT&T refuses to connect the telephone system with private communications systems, that AT&T is trying to prevent the development of independent telecommunications equipment manufacturers, and that AT&T abuses the regulatory process.

As noted earlier, the principles of free and open competition mentioned above should apply to all companies. As a matter of public policy, however, antitrust law can preempt those principles for any company. Symmetry of regulation does not itself ensure open competition in the public's interest without adequate safeguards to prevent the anti-competitive practices that the Consent Decree was designed to prevent and that current litigation asserts continue to exist. Any recommendation to alter an existing consent decree should only be premised on detailed and thorough analysis. The Commission made no finding on the validity of the allegations of anti-competitive behavior.

Therefore, the Commission recommends that to promote fair competition with the widest participation possible, companies that provide regulated

communications common carrier services should also be permitted to offer EFT system services and related terminal equipment, but not under tariff. It should be done in such a manner as to prohibit unreasonable and anti-competitive cross-subsidization of untariffed services from tariffed services, with appropriate enforcement by the FCC and the antitrust agencies. (20-0-6)

AT&T, as the largest supplier in the regulated communications services industry, poses special problems. On the one hand, AT&T may possess technological knowledge, research capabilities, and the ability to offer EFT systems and services that should be available to the public. On the other, it may possess dominant market power that could be exercised in the unregulated EFT markets in a manner that would force other firms from those markets and preclude the entry of new firms into them. In the long run, this would be detrimental to the public.

At present, the Consent Decree of 1956 and FCC regulations prohibit AT&T from offering other than tariffed communications services, including EFT systems and services. Unless and until that decree is modified--an issue on which this Commission takes no position--AT&T will be permitted to provide only those EFT systems and services permitted under FCC regulations and the 1956 Consent Decree.

³³Continued

64.702 of the Commission's Rules and Regulations (Second Computer Inquiry)," Docket No. 20828 (May 26, 1977).

³⁴Ibid.

In the area of standards, the Commission found that mandatory standards are contrary to achieving flexibility, while de facto standards can be anti-competitive. Because EFT is in such an early state of development and because setting equipment standards prematurely might stifle innovation, mandatory standards are not desirable at this time. To minimize the problem of de facto standards, the Commission concluded that a company should be required to make public the communications interface and protocol standards it uses if these are at variance with ANSI standards. If these company standards are changed, the changes should also be made public. To assure maximum lead time for other manufacturers to design compatible equipment, these standards should be made public when they are certified for use. This provision should apply only to standards necessary to achieve interconnection of equipment to the network and not the proprietary designs that affect the performance of the equipment itself.

Therefore, the Commission recommends that it is premature, at this point, to establish federally mandated standards for EFT systems and related terminals. At the same time, communications interface standards and communications protocols used by EFT equipment manufacturers and other providers that are not in accordance with public ANSI standards, must be published when adopted for use by the manufacturer or provider. (12-1-8)

Additional issues in the area of standards are discussed in the following chapter.



Chapter 11

Standards for EFT

A technical standard, in a general sense, is a model or guide for the characteristics of products, processes, or procedures to be followed by manufacturers of similar equipment. The purpose of a standard is to ensure the compatibility and transferability of components built by different manufacturers. Although a standard may specify the nature of a desired end product (for example, the location of embossed material on a plastic card), it does not necessarily specify the methods used to arrive at that product. This leaves room for improvement in cost or efficiency in implementing the defined standard.

In a widely developed and used national network of EFT systems, technical standards will be needed for many aspects of its operation. They will help control the initiation, communication, security, and reporting of EFT transactions. Such standards represent an economical and necessary means for system operators and manufacturers to design EFT systems whose various components--terminals, switches, data bases, and delivery systems--can be shared by many users if desired or required. Standards will

enable consumers to use EFT services more easily wherever they are offered. Standards that provide for technical and service compatibility will enable organizations providing EFT services to interconnect their systems and interchange transactions to the benefit of consumers. EFT standards for data entry, formatting, communication, and security will help lower design costs for manufacturers and permit them to concentrate on factors such as the reliability, serviceability, speed, and cost of common functions. Standards have the potential to foster competition within the data processing, communications, and financial services industries, and enable small companies to compete.

As discussed in Chapter 10, "Competition Among Suppliers," the major issue concerning standards is their impact on competition among suppliers. But other important questions relating to standards also were addressed by the Commission. What is the effect of standards on technological progress? How adequate are existing standards and the present standards-setting process? Is there a need for a facility to test compliance with EFT standards?

The Commission found considerable disagreement among suppliers in these three areas. As a result, the Commission developed programs to:

- Determine the best methods for developing new EFT standards.
- Survey the status of existing EFT-related standards.
- Identify areas where new standards are required.
- Determine the need for a facility to test compliance with standards.

In reaching its recommendations on EFT-related standards, the Commission has taken into consideration the testimony of expert witnesses at hearings,¹ responses to a questionnaire submitted to some 200 industry representatives,² information gathered at its workshops on standards,³ and staff research and analysis. All of this information has been considered in the light of the present stage of development of EFT and its most likely pattern of growth over the next several years.

STANDARDS-DEVELOPMENT PROCESS

The standards-development process has been criticized recently for being slow, expensive, unresponsive to the needs of all parties, detrimental to technological progress, and occasionally anti-competitive.⁴ To understand these criticisms, it is necessary first to understand how national standards currently are developed.

The development and use of national standards is voluntary in the United States. The American National Standards Institute (ANSI) is the clearinghouse and coordinating body for standards activity on the national level. It also represents U.S. interests in international standards activities. ANSI is a federation of some 180 trade associations, technical societies, professional groups, and consumer organizations. These organizations are joined by representatives from universities, Government, and 1,000 individual companies. The policies and procedures of ANSI are dictated by its Board of Directors, which is elected by its organizational membership.

There are three ANSI committees that have responsibility for most EFT-related standards. These are Committee X3: Computers and Information Processing; Committee X4: Office Machines and

¹ *National Commission on Electronic Fund Transfers, "EFT Technology--Present and Future, Parts I, II, and III, Testimony Presented to the National Commission on Electronic Fund Transfers, Dec. 14-16, 1976," Internal Working Documents IWD-64, IWD-65, and IWD-66 (October 1977).*

² *See NCEFT, "Summary of Suppliers Questionnaire Responses," IWD-35 (October 1976).*

³ *See NCEFT, "A Profile of the Current Status of Privately Sponsored POS Switches," IWD-28 (to be published) and NCEFT, "NBS Workshop," IWD-46 (to be published).*

⁴ *NCEFT, IWD-64, IWD-65, and IWD-66.*

Supplies; and Committee X9: Financial Services. The Computer and Business Equipment Manufacturers Association (CBEMA) acts as the secretariat for Committees X3 and X4. The American Bankers Association serves as the secretariat for Committee X9.⁵

Standards are developed in ANSI through the consensus process, which requires that a standard be discussed and approved by significantly more than a majority, but not necessarily by all of the interested parties.⁶

Although compliance with national standards is voluntary, the Federal Government, by virtue of its size, has been influential in fostering their acceptance in the private sector. In the areas of data processing and communications, the Federal Government generally adopts ANSI standards and mandates them for its own use.⁷ The Department of Commerce through the National Bureau of Standards (NBS) is charged with publishing Federal Information Processing Standards (FIPS), which are usually ANSI standards. If no ANSI standard has been developed, NBS will develop and promulgate a new standard if it believes one is needed.⁸

In addition to the national standards-development process, there is an international effort coordinated by the International Organization for Standardization (ISO). Knowledgeable industry representatives from most industrial countries participate in this voluntary process to devise standards for worldwide acceptance and use. ANSI delegates, sponsored by their individual companies, represent U.S. interests.

Many of the same EFT standards needed on a national scale are needed at the international level. Credit card issuers operate worldwide; SWIFT is a

⁵ An organization that acts as the secretariat of an ANSI committee is responsible for distributing committee minutes and related documents and for ensuring that any standard that emanates from the committee has been thoroughly reviewed by all interested parties.

⁶ ANSI operates as the organizational structure for standards development and accreditation. ANSI maintains only a small staff to support its officers, Board of Directors, and central administration function. The development of the strongest possible consensus on a standard is conducted by ANSI members. These include the secretariat of a working committee, the sponsor of a standard, (canvass method), or an accredited organization accepted by ANSI. These three alternative methods for developing consensus all involve a democratic process in which proposed standards are distributed to all interested members for comment and voting. Once an organization (secretariat, etc.) believes that an adequate consensus has been achieved, the standard, with comments, is referred to ANSI's Board of Standard Review for accreditation.

⁷ In accordance with the provisions of Public Law 89-306, part 6 of Title 15 CFR, and Executive Order 11717, standards are mandatory for all Government agencies, with a few exceptions.

⁸ The Department of Commerce FIPS Publication 46, "Data Encryption Standard" is an example.

consortium of 38 countries conducting international transactions over wire.

The standards work in the international arena is more complex and involves more participants, yet ISO often develops standards for advanced technologies earlier than does ANSI. For example, ISO first considered the magnetic stripe track III standard prior to its introduction in ANSI discussions.

Several criticisms about standards and the process by which they are developed were made at the Commission hearings held in December 1976 in San Francisco.

The major problem addressed, as discussed in Chapter 10, is that of de facto standards. The second most often referenced problem is timeliness; establishing standards is a lengthy process and often can take several years. The credit card standard, x4.13, was somewhat unusual: its total time to adoption was approximately three years. The magnetic stripe standard for tracks I and II was even more unusual, as it was published in just two years. On the other hand, participants have been trying to agree on a standard computer channel interface for more than 10 years.

Part of the delay can be attributed to the inherent nature of the process itself: that is, the requirement of achieving a consensus. Many people and organizations can be affected by a standard. Studies have shown, however, that the process is most responsive if the actual users of a proposed standard are fairly and actively represented in its development.⁹

Another delaying factor is that standards are developed on a voluntary, part-time basis. Development depends largely on the willingness of the manufacturer or supplier group to perform the necessary laboratory studies required to make certain a standard is technically feasible. Until recently, Government laboratories, such as those at NBS, were simply not available to the standards committees.

A third criticism relating to standards themselves is that they may inhibit technological progress since they may not employ the most recent technical advances, but prematurely "freeze" the status quo at a lowest common denominator.

Yet, according to other testimony at the Commission's hearings, the benefits of setting standards outweigh the drawbacks of "freezing" the technology. According to this testimony, the danger of curtailing innovation is over-stated and, in any event, the beneficial trade-offs--lowering design costs, enabling small companies to enter the market, and allowing vendors to concentrate on reliability factors--outweigh those concerns. To keep pace with technological advances and

⁸ *Continued*

The Data Encryption Standard (DES) specifies an algorithm to be implemented in electronic hardware devices and used for the cryptographic protection of computer data.

⁹ *See for example, David Hemenway, Industry Wide Voluntary Product Standards (Cambridge, Mass.: Ballinger Publications, 1975).*

improved product performance, ANSI procedure requires that standards be updated every five years.

The final criticism expressed by witnesses at the hearings was that the standards process does not adequately allow for participation by all involved parties--from small suppliers to users to consumers. Many experts who argued that the ANSI process is dominated by large companies pointed out that, ultimately, the consumer pays the cost of these systems, yet he has little or no voice in the development process.¹⁰

It should be noted that the entire standards-making process and the question of national standards are subjects that have been undergoing Congressional scrutiny for the past several years. These inquiries encompass far more than EFT-related standards.¹¹ A bill has been introduced in the last two sessions of Congress calling for a review of existing standards-making rules and the adoption of national standards for use by Government.¹²

All the criticisms heard with respect to developing EFT standards were found to apply also to all other areas of standards. The Commission concluded that it was beyond the scope of its mandate to make recommendations on the broad policy issues of the entire standards-making process. Rather, it directed its effort toward improving the voluntary process as it exists today in regard to EFT-related standards and toward making recommendations for change that would result in more timely EFT standards.

During the Commission's investigations and, in part, because of the Commission's work, ANSI made

changes that should open up and improve the process of creating EFT-related standards. A new X9 EFT

¹⁰ In a related matter, the Commission was interested in determining to what extent suppliers engage in consumer research, how such research affects the development of EFT systems, and to what extent these research results affect the industry. Questionnaires sent to over 200 EFT suppliers revealed that most firms do not conduct research to determine consumer attitudes. The majority rely on published research reports or research conducted by user financial institutions. Some conduct research in cooperation with these users.

Consumer research appears to be an issue that is of greater concern to the financial institutions than to the vendors. These institutions will offer EFT services to consumers when they believe that consumers are ready to use them; the vendors will then supply the equipment to meet the necessary specifications. As a group, the vendors strongly believe that the consumer must be educated about the benefits of EFT, must be shown the advantages that EFT can offer over paper-based systems, and must be given choices in the development of EFT systems.

As a result of its findings, the Commission concluded that there are no consequential national policy issues related to consumer research by suppliers. Therefore, the Commission makes no recommendations on this issue.

¹¹ Also, EFT is a multifaceted system encompassing data processing, communications, banking,

study group (X9C) was formed in early summer 1977 to coordinate work in EFT standards. ANSI has enlarged the membership of the X9C committee across industry lines to include retailers, insurance companies, regulators, consumer credit representatives, bankers, and thrift institution trade association representatives.

Yet the concerns voiced by many vendors at the Commission's hearings persist. This group believes the current process will unnecessarily delay the adoption of standards needed for the orderly evolution of EFT systems.

The Federal Government could aid in this activity by assigning to the relevant ANSI subcommittees knowledgeable technical and systems people who would have access to and control of laboratories that could make substantial technical contributions to standards development.

Therefore, to ensure that the necessary EFT standards are developed in a timely fashion, the Commission recommends that representatives of financial regulatory agencies--one Federal and one State--should assume an active role in the voluntary standards-making process for EFT related standards by becoming principal members on each of the ANSI committees and subcommittees involved in the development of such standards. (Unanimous voice vote in favor.)

In addition, the Commission concluded that financial regulators should coordinate their efforts to develop consistent positions on developing standards.

ADEQUACY OF EXISTING STANDARDS

The Commission undertook two programs to determine the adequacy of existing EFT standards--one to survey the status of EFT-related standards and another to identify areas where new standards are required. To begin this investigation the Commission, in conjunction with NBS, convened a two-day workshop on EFT-related standards.¹³ Attendees included active participants in the standards-making process, as well as representatives of consumers and financial regulatory agencies.

With information gathered at the workshop, the Commission developed a list showing the current status of EFT-related standards. This appears in Table 11.1.

The workshop group recognized from the outset that EFT is a blending of components from several

¹¹Continued

and retailing. EFT will in part depend on standards in all of these areas, even though they are not normally associated solely with EFT.

¹²Since 1975, the Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary has been holding a series of hearings on the subject of standards. In 1976, the "Voluntary Standards and Certification Act," S3555, was introduced. It was reintroduced in 1977 as S825.

¹³Further details on the conclusions reached in the meeting are presented in NCEFT, "NBS Workshop Summary," IWD-46 (to be published).

Table 11.1.

STATUS REPORT ON EFT-RELATED STANDARDS

<u>Property or Item</u>	<u>ANSI Status</u>	<u>ISO Status</u>	<u>FIPS Status</u>
<u>Plastic Cards</u>			
● Physical Specifications, Embossing Locations, and Fonts, Account Numbering System.	Issued as X4.13-1971; in process of revision	Issued as ISO Standard 2894	N/A
● Magnetic Stripe Specification. Encoding Techniques, Encoded Character Sets (Subsets of ASCII) Formats Track I and II.	Issued as X4.16-1973; revised as X416-1976; (ASCII, X3.4-1968)	Issued as ISO Standard 3554; (ISO Standard 646 ISCI1)	N/A
● Durability Specification and Measurement Techniques.	In process ANSI X4A11	In process ISO TC95/SC17 WG-2	N/A
● Test and Reference cards.	In process ANSI X4A11	In process ISO TC95/SC17 WG-2	N/A
● Card Quality Control Center.	In process ANSI X4A11	In process ISO TC95/SC17 WG-2	N/A
● Format and Character Set for Track III Read/Write.	In process ANSI X9	Draft International Standard 4909	N/A
● Physical and Magnetic Characteristics of Track III.	In process ANSI X4A11; Draft standard	In process ISO TC95/SC-17; Draft standard	N/A

Table 11.1

STATUS REPORT ON EFT-RELATED STANDARDS (Continued)

<u>Property or Item</u>	<u>ANSI Status</u>	<u>ISO Status</u>	<u>FIPS Status</u>
<u>Transaction Slip Printing</u>			
● Imprinted field location, account number, date, transaction point, transaction type, money amount on credit sales slips.	In process; Draft standard approved by X4A11	Not started	N/A
● Printing location on unit forms and rolls for printing terminals.	Not started	Not started	N/A
<u>Communications</u>			
● Interindustry credit card, message specification, record data elements, record formats, texts and responses.	In process ANSI X4A11	Not started	N/A
● Interindustry EFT card message specifications.	Not started	Not started	N/A
● Digital interface.	Not started	Not started	N/A
● Transaction point identification.	Started ANSI X4A11	Not started	N/A
<u>Security</u>			
● Card security.	Not started but recognized	Not started but recognized	N/A

Table 11.1

STATUS REPORT ON EFT-RELATED STANDARDS (Continued)

<u>Property or Item</u>	<u>ANSI Status</u>	<u>ISO Status</u>	<u>FIPS Status</u>
● Data encryption.	Not started	Not started	In process; Draft standard approved
● Personal identification codes (PIN).	Not started	Not started	N/A
● Personal feature identification.	Not started	Not started	N/A
● Synchronous Signaling Rates for Data Transmission.	X3.1-1969	In process	FIPS-22
● Code for Information Interchange.	X3.4-1968	646	FIPS-1
● Bit Sequencing of the American National Standard Code for Information Inter- change in Serial by Bit Transmission.	X3.15-1966	In process	FIPS-16
● Character Structure and Character Parity Sense for Serial-by-Bit Data Communi- cations in the American National Standard Code for Information Exchange.	X3.16-1966	1155 1177	FIPS-17

Table 11.1

STATUS REPORT ON EFT-RELATED STANDARDS (Continued)

<u>Property or Item</u>	<u>ANSI Status</u>	<u>ISO Status</u>	<u>FIPS Status</u>
● Signal Quality Interface Between Data Processing Terminal Equipment and Synchronous Data Communication Equipment for Serial Data Transmission.	X3.24-1968	Not started	FIPS-18
● Procedures for the Use of the Communication Control Characters of the American National Standard Code for Information Interchange in Specified Data Communication Links.	X3.28-1971	1745 2111 2628 2629	Status unknown
● Graphic Representation of the Control Characters of the American National Code for Information Interchange.	X3.32-1973	2047	FIPS-36
● Synchronous High Speed Data Signaling Rates Between Data Terminal Equipment and Data Communications Equipment.	X3.36-1972	Status unknown	FIPS-37
● Code Extension Techniques for Use with the 7-Bit Coded Character Set for American National Standard Code for Information Interchange.	X3.41-1974	2022	FIPS-35
● Determinations of the Performance of Data Communications Systems.	X3.44-1974	Status unknown	Status unknown

fields, including data processing, communications, finance, and retailing. Standards already developed in each of these areas will be used in building and operating EFT systems.

Nevertheless, some standards were identified as unique to EFT and necessary for allowing interchange among different card issuers and systems. This need for standards arises as independently developed systems begin to exchange information and transactions.

The workshop identified five areas of EFT-related standards--consumer interface, plastic cards, message formats, numbering systems, and communication protocols--that would be needed for wide-scale interchange. Some already exist today, some need to be developed, and some only require a resolution to use a specific standard from a number already available.

Consumer interface standards need to be developed for the basic transaction advice (receipt) and descriptive statement given consumers. For systems to capture the necessary data at the time of transaction, standards must detail what kinds of information are required on the statement and receipt. Most experts agree that the account number, dollar amount, transaction number, and descriptive data such as date, location, time, and type of transaction should be included. But controversy centers on the level of detail needed to describe a transaction and the degree to which this decision is the marketing prerogative of individual institutions.

Plastic cards, which are now the primary means by which consumers access an EFT network, require a

uniform card specification and information format. Many standards for plastic cards including size and physical composition already exist.

Standards were also found to be needed in the message formats used to exchange information among different networks. These messages contain the information needed to authenticate or reject an EFT transaction, to provide a meaningful descriptive statement to consumers, and to convey such other information as may be needed to operate the system. There are no published standards for message formats although the format used between airlines and credit card companies appears to constitute a de facto standard.

Resolution on a numbering system standard is also necessary. In an interchange environment it is necessary to identify uniquely the institution that issued the card, the type of transaction, and the individual initiating the transaction. There is a lack of agreement between credit card and debit card issuers in the approach to numbering systems for identifying card issuers and cardholders. Institutional identifiers for credit card issuers have been in place for some time. As a result of the Department of the Treasury's direct deposit program, all depository institutions have been issued routing and transit (R/T) numbers that formerly were issued only to commercial banks (and some mutual savings banks) in the check clearing process. Some commercial bank debit card issuers have adopted the R/T check model for identifying the financial institution, while others have adopted the credit card model. Thrift institutions have either adopted their own thrift numbering system, the credit card system, or the R/T numbers for

issuer identification. But most debit card issuers--both commercial banks and thrift institutions--are using the customer savings or demand deposit account number for customer identification.

The last area identified as needing standards in an interchange environment is communication protocols. There are several ANSI standards in this area including the recently adopted Advanced Data Communications Control Procedure (ADCCP). The problem is not one of lack of standards but of general agreement on using a specific standard. Such an agreement would greatly simplify the use of equipment from different manufacturers in the same network. This type of equipment compatibility concern is not new. It has been expressed consistently in the past by virtually every user of data processing. EFT has raised these issues for financial users because independently developed networks must eventually interface for interchange and the number of vendors and types of equipment for EFT applications has mushroomed.

Eventually, consumer demand will require networks to interchange information with other networks in the same or contiguous regions. If networks are technically unable to do so, they must develop new interface techniques to overcome incompatibilities, or decline to participate. The expense of these alternatives can be significant, particularly for small local systems. If interchange standards are developed now and revised as necessary on a periodic basis, then existing and developing systems can incorporate them on a planned evolutionary basis.

The Commission concluded that the orderly development of EFT requires certain specific

standards in the near and long term and that standards that directly affect interchange are of prime importance. The Commission also recognized that these standards could not be developed during its lifetime. The Commission identified five areas in which standards are needed. In two--plastic cards and communications protocols--the Commission found that where needs exist, the normal ANSI processes have met and will continue to meet those needs. In three areas--consumer interface, message formats, and numbering systems--the Commission found there is a need for immediate continuing work. *In an effort to encourage the speedy development of these standards, the Commission recommends that ANSI should expedite the development of standards for numbering systems, message formats, and standardized invoice and billing systems. (Unanimous voice vote in favor.)*

THE NEED FOR A TEST FACILITY

If the consumer cannot rely on consistent access to his financial accounts through a variety of systems and terminals, the development of EFT on an interchange basis will be severely retarded.

Once standards are developed, they may or may not be accepted or used on a wide-scale basis. Even if adopted for such use there may not be an independent certifying laboratory to test individual products and certify that they are in compliance with a particular ANSI standard. For example, the media used by the consumer to access an EFT system, which today is the plastic card, needs to meet the minimum published specifications in order to facilitate interchange. There are a number of existing

standards governing both the physical composition of the card and its magnetic stripe or optical character recognition characters. Many of these are crucial to the ability of terminals to read the information on the card automatically. At present, only the card manufacturers themselves have the equipment and expertise to test cards for compliance. A further problem is that many standards are as yet relatively undefined and individual interpretations can and do vary.

Although there may be many instances of card related failures, only a few are documented. To date there is no program to measure the number of failures. The Commission concluded that it has not received sufficient evidence to recommend the establishment of an independent test facility. Because reliable and interchangeable plastic cards are needed when networks begin to exchange transactions, the Commission concluded that the financial industry itself will respond, if indeed card failures become a significant problem.



Chapter 12

Security in EFT

Some consumers are deeply concerned that criminals will steal funds from their accounts by gaining access to EFT systems in depository institutions with relative ease and slight chance of detection.

Although such concerns are not entirely without foundation, they are heightened by misunderstandings about EFT and the protection available to account holders. They may also be heightened by popular notions of computer criminals who are capable of penetrating seemingly secure electronic systems or of pranksters intent on disrupting the system.

The Commission was concerned about the security of the assets held in any financial institution. But the Commission found that the vulnerability of EFT systems is easily overstated, and that security can be maintained in an EFT environment.

The Commission noted in particular that the combination of Federal and State legislation, regulations, insurance, and contemporary banking practices have produced in the United States a very secure depository system. Federal and State regulations hold managers of depository institutions to

high standards of security in all aspects of operations related to funds and account holders. Federal insurance protects depositors in federally insured institutions and industry practices are constantly being refined to meet the challenge of security breaches.

On the technical side, considerable study by various groups has been made of the security of various components of an EFT system.¹ These studies by computer and communications security experts generally agree that while the security of EFT needs to be upgraded continually, technical and procedural solutions to all known security problems are currently available. However, the difficulty in

¹See, for example, *The Mitre Corporation, "Security Aspects of Bank Card Systems," prepared for the American Bankers Association (September 1975).* Also see *"The Analysis of Certain Potential Threats to EFT System Sanctity," a study conducted for the Electronic Industries Foundation by Kranzley & Co. under contract to the Office of Telecommunications Policy (December 1976).*

implementing these solutions lies in achieving a balance between their cost and the value of the losses they protect against. It also may be the case that EFT has the potential for being significantly more secure from fraud than is the paper-based payments system. A higher level of technical skill is needed to defraud an EFT system than is required to forge or alter a check. The number of persons capable of perpetrating a fraud is thus reduced in an EFT-based payments system.

The Commission concluded that these regulations, practices, and technological developments could be adapted to protect the consumer as EFT emerges in the future.

To identify and study the security measures needed in an EFT environment, the Commission conducted hearings with security experts in December 1976, sent questionnaires to EFT suppliers,² held and attended workshops on security issues,³ was briefed on communications security by the National Security Agency, made use of outside consultant studies,⁴ and analyzed financial regulatory responses to current EFT security needs.⁵

BACKGROUND ON THE EFT SECURITY ISSUE

EFT security is generally defined as the protection of financial data in EFT systems against unauthorized and intentional alterations or disclosure to commit fraud. Security measures for EFT include advanced technology and management controls.⁶

Evidence before the Commission indicates that most suppliers of EFT systems and services view EFT

as an extension of existing computerized retail and banking applications. For the most part these have

² National Commission on Electronic Fund Transfers, "Summary of Suppliers Questionnaire Responses," Internal Working Document IWD-35 (October 1976).

³ The Commission staff participated in two National Bureau of Standards workshops on the data encryption standard and held a technology workshop to bring technical information before the Commission. See NCEFT, "Presentations Made at the Technology Workshop on June 15, 1976," IWD-13 (July 1976).

⁴ For example, Federal Deposit Insurance Corporation, "Guide to EDP and EFT Security Based on Occurrences," prepared by SRI International (Oct. 1977).

⁵ In connection with this analysis, the Commission also sought to determine the minimum acceptable level of reliability of EFT equipment, obstacles to achieving this level, and the possible need for governmental action to assure achievement of this level. Commission findings showed that suppliers consider reliability to be an important issue, but that they believe that users will weed out unreliable products based on performance, cost, and competitive factors.

⁶ The Commission defined its investigations in the area of security to exclude security breaches that pose privacy problems, but do not contribute to fraudulent acts. The Commission determined that privacy is an important area of concern, but that it has no identifiable technological component. See Chapter 1, "Privacy," for Commission recommendations on this subject.

been in-house operations under the control of a single institution. Interconnected EFT systems introduce a new dimension in security risks--that of large and complex communication networks with switching facilities used by many financial institutions and merchants. The possibility that a breach in security at one point may compromise security at many financial institutions thus becomes both real and important.

EFT security, then, is an evolving issue. At this early stage of development, there has been only limited experience with criminal penetration of EFT systems. Fortunately, although there are points of vulnerability, experience to date shows that actual loss from fraud is low.

In late 1976, for example, the three Federal financial regulatory agencies surveyed all federally insured banks and identified 1,260 that use EFT systems. In early 1977, these banks were surveyed by the Federal Deposit Insurance Corporation (FDIC). Approximately one third of the banks reported security problems with EFT systems. Losses, however, were small (less than \$100 per occurrence on the average) and the problems that caused them were not difficult to correct.⁷

Monitoring procedures and studies of approved operating remote service unit (RSU) projects conducted by the Federal Home Loan Bank Board (FHLBB) have not found any significant security problems at or through terminals at the remote location. As of the date of the Board's last security survey (June 1976), there were no known cases of robbery, successful fraud attempts, or loss to any account holders.

Only four incidents relating to stolen cards were reported.

Flexibility, innovation, and experimentation have been critical to the growth of EFT systems. With this in mind, some Federal financial regulatory agencies have adopted guidelines for security measures rather than issuing formal regulations at this point.

Regulatory agencies, financial institutions, trade associations, and the suppliers of EFT products and services are all aware of security vulnerabilities and of potential solutions. Seminars and publications are educating members of the financial communities and their internal electronic data processing auditors.⁸ In addition, risk analyses, in which the cost of security measures is held to

⁷ David Walker, "An Analysis of Changes in EFTS Activity Levels, Costs and Structure in the U.S.: 1975-1977," prepared by the Division of Management Systems and Economic Analysis, FDIC, Working Paper 77-3 (1977). Linda Fenner Zimmer's latest status report on cash dispensers and automated tellers concurs with this finding; "Statistical Data and Analysis with Selected Case Histories: Fourth Status Report," Parkridge, N.J. (1977).

⁸ See for example FDIC, "Introduction to EFT Security," (August 1976). Also see Osterberg and Associates, "Security, Privacy and Accuracy in EFT Networks," prepared for the United States League of Savings Associations (April 1976).

a level no greater than the fraud it is designed to prevent, are currently in progress.⁹

Although no instances of major financial loss under EFT have been found, the Commission does not interpret this as cause for relaxation of the vigorous efforts needed to assure continuing security of EFT systems.

POINTS OF VULNERABILITY

Security considerations for a total EFT system encompass three subsystems: terminals, communication links, and computers.

Terminal Vulnerability

The imposter poses a likely threat to terminal security. In many EFT systems, the consumer is issued a plastic card that contains certain electronically encoded data. The consumer also is issued a corresponding personal identification number (PIN). Both are needed to activate the terminal. Legitimate consumers may find it convenient to write their PIN on their plastic card. If the card is then lost or stolen, an imposter has both of the necessary means to operate the terminal.¹⁰

An imposter may also seek to reproduce the plastic card for use or sale. There are several methods for transferring the magnetically encoded data from one card to another. One, called skimming, is a simple, inexpensive process that produces duplicate cards of uneven quality. Another, called buffer recording, produces higher quality counterfeit cards,

but is electronically complex and more expensive than is skimming. However, an imposter can deceive the terminal using a counterfeit or stolen card only if he knows the corresponding PIN.

Employees who have access to terminals in EFT systems as a part of their jobs also can manipulate them illegally. Examples of insider personnel who have such access include retail cashiers, financial institution tellers, and terminal maintenance personnel.

Communication Links Vulnerability

Communication links refer to the methods by which the EFT transaction is communicated from the point of entry to the computer system. By targeting on these links, the criminal may be able to compromise the EFT system.

The majority of EFT computer systems used today are operated in the "off-line" mode. This means that terminals are not directly connected by

⁹For example FDIC, "Guide to EDP and EFT Security Based on Occupations," op. cit.

¹⁰The Commission noted this security problem and adopted a recommendation concerning it. The Commission recommends in Chapter 3 that consumers should be considered negligent, and therefore liable for any and all loss resulting from their actions, if they keep their PIN with their card or write their PIN on their card. See Chapter 3, "EFT Theft, Error, and System Malfunctions."

telephone line to the computer. Transactions are communicated by means of exchange of such physical objects as punched cards, magnetic tape, or computer printouts. The criminal can penetrate and compromise the system by adding, changing, or destroying an entry on any of these physical objects.

EFT is also well suited, however, to the growing use of "on-line" data processing, in which terminals and the host computer communicate electronically. Data supplied both to and by the computer move over telephone lines or other electronic means.

In the on-line mode, the communication link is most vulnerable to wiretapping.¹¹ Wiretapping may be used passively to gather data such as PINs or volume of financial activity. It may also be used actively to falsify records, steal stored information on funds, or disrupt business activity by confusing records.

Spoofers or imposter terminals are wiretapping devices. Spoofers are simple, inexpensive instruments that deceive the system. A device that can simulate telephone company tones and control codes is an example of a spoofer. Although spoofers and imposter terminals function on similar principles, the imposter terminal is more complex and expensive than the spoofer. Its potential for penetrating and manipulating the EFT system is much greater because it appears to the system to be a valid terminal.¹²

Another point of communications vulnerability is the switch. As EFT systems expand, a transition from single to multiple financial institution involvement is anticipated. Networks will develop giving any terminal or computer the ability to

communicate with the host computer of any other financial institution. These communications will be controlled by a computer functioning as communications switch. Along with all other computers in the system, the switch is subject to penetration.

Computer Vulnerability

The computer is the heart of the EFT system, as it is of the check-processing system. Although some assets and information may be exposed by the terminal or the communication link, these components are only points at which a part of the computer can be reached. All assets and information, on the other hand, can be exposed through the computer itself.

The earliest computers were capable of processing only one application at a time. Each application was introduced manually into the computer process in turn. In such an environment, data processing audits were comparatively simple. With today's technology, however, computers are capable of operating on many applications simultaneously and new programs or modifications as well as data

¹¹For a detailed discussion see The Mitre Corporation, "Study of Vulnerability of Electronic Communication Systems to Electronic Interception," conducted for the Office of Telecommunications Policy (January 1977).

¹²For a fuller explanation of imposter and spoofer terminals, see FDIC, "Introduction to EFT Security," *op. cit.*, pp. 7, 9-16.

can readily be entered from remote sites via terminals and communications lines. The task of auditing the data processing function in today's environment is considerably more complex than in the early days of computers.

The computer is subject to acts of sabotage, either through data or software manipulation or by physical attack. Vandalism is another kind of computer crime. It is also conceivable, although unlikely, that a criminal or terrorist group might seize a computer installation and hold it hostage.

The computer is primarily vulnerable to the people who operate it. People such as programmers, tellers, and equipment maintenance personnel have knowledge of, and proximity to, the system, which can enable them to evade system safeguards and control points.

The electronics industry has developed elaborate methods of assuring that computers cannot be compromised easily. Figure 12.1 shows at what points electronic data processing audit techniques can be used to detect and control efforts to compromise an EFT system by personnel with access to the system. Figure 12.2 shows what electronic data processing audit tools and techniques are available to detect and prevent such efforts.¹³ For example, as shown in Figure 12.1, column 1, a transaction operator (bank teller or retail clerk) is in a position to defraud the system by altering the transaction advice, entering it improperly, or altering the transaction record within the computer or the information on the transaction record supplied to the consumer. The audit tools or techniques available to detect and prevent such fraud on the part of the transaction

operator are shown in Figure 12.2, column 1. They include transaction selection, embedded audit data collection, extended records, generalized audit software, job accounting data analysis, and disaster testing.¹⁴ It is not necessary to use all of these techniques or tools in any given system, but to select those that provide the most cost-effective solution to the problem. The people responsible for selecting and implementing the audit tools as well as monitoring them, are indicated on Figure 12.1 by an "R."

PRESENT COUNTERMEASURES AND SAFEGUARDS

Several technical and procedural countermeasures exist today, although none has gained widespread acceptance because of their cost and/or reliability.

These countermeasures for security of the plastic card involve introducing into the card a

¹³ The tables presented in Figures 12.1 and 12.2 are extracted from the work done by Donn Parker for the FDIC, "Guide to EDP and EFT Security Based on Occupations," *op. cit.*, in his work with the Commission.

¹⁴ For the interested reader, each audit tool and technique, occupation and control point is described fully in FDIC, "Guide to EDP and EFT Security Based on Occupations," *op. cit.* These descriptions have been extracted from the *Systems Auditability and Control Reports* published by the Institute of Internal Auditors, Inc., Altamonte Springs, Fla.

Figure 12.1.

Internal Fraud Control Points

Electronic Data Processing Control Points for Detection and Prevention of Fraud	EFT System Personnel Who Can Perpetrate Fraud																			
	Operations						Software			Hardware				Management				Other		
	Transaction Operator	Computer Operator	Peripheral Operator	Job Setup Clerk	Data Entry & Update Clerk	Communications Operator	Media Librarian	System Programmer	Applications Programmer	Terminal Engineer	System Engineer	Communication Engineer	Facilities Engineer	Network Manager	Operations Manager	Data Base Manager	Programming Manager	Identification Control Clerk	Security Officer	EDP Auditor
Transactions origination	x					x			R	x		x		x			R	x	R	R
Transactions entry	x		x	x	x	x			R	R		x		x		x	R		R	R
Data communication						x		R	R	x		R		R	x		R		R	R
Computer processing	x	x	x	x	x	x		R	R	x	R	x		x	x	x	R	x	R	R
Data storage and retrieval		x	x	x	x	x	x	R	R	x	R				x	x	R	x	R	R
Output processing	x	x	x	x		x	x	R	R	x	R	x			x	x	R	x	R	R
Computer center		x	x	x	x	x	x	x			x	x	R	x	R	x	x	x	R	R
Applications system development								x	x								R		R	R

R—Responsible for operation or implementation.

x—Object of control.

Source: FDIC, "A Guide to EDP and EFT Security Based on Occupation" (October 1977).

Figure 12.2.

Internal Fraud Detection Techniques

	EFT System Personnel Who Can Perpetrate Fraud																			
	Operations						Software			Hardware				Management				Other		
Electronic Data Processing Audit Tools/Techniques for Detection	Transaction Operator	Computer Operator	Peripheral Operator	Job Setup Clerk	Data Entry & Update Clerk	Communications Operator	Media Librarian	System Programmer	Applications Programmer	Terminal Engineer	System Engineer	Communication Engineer	Facilities Engineer	Network Manager	Operations Manager	Data Base Manager	Programming Manager	Identification Control Clerk	Security Officer	EDP Auditor
Test data method		x	x	x				x	x		x	x		x	x		x		None	None
Base data system evaluation		x	x	x				x	x		x	x		x	x		x			
Integrated test facility						x		x	x		x						x			
Parallel simulation		x	x			x		x	x		x	x		x	x		x			
Transaction selection	x		x		x	x				x		x		x	x	x		x		
Embedded audit data collection	x	x	x	x	x	x				x	x	x		x	x	x		x		
Extended records	x		x		x			x	x	x	x	x		x	x	x	x	x		
Generalized audit software	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x		
Snapshot								x	x	x	x	x		x		x	x			
Tracing								x	x	x	x	x		x			x			
Mapping								x	x								x			
Control flowcharting						x		x	x					x	x	x	x			
Job accounting data analysis	x	x	x	x		x	x		x					x	x	x	x	x		
System development life cycle								x	x						x		x			
Systems acceptance control group								x	x	x	x	x					x			
Code comparison		x		x				x	x	x	x	x			x		x			
Disaster testing	x	x	x			x	x			x	x	x	x	x	x	x		x		

x—Object of control.

Source: FDIC, "A Guide to EDP and EFT Security Based on Occupation" (October 1977)

random property or harmless radioactive isotopes. The random property is read optically or magnetically. Because it is random it is virtually impossible to reproduce. Radioactive materials in this country are federally controlled and therefore not readily available for illegal purposes.

Communications and data files can be protected by encryption, for which there is now a Federal standard.¹⁵ There is no evidence, however, in terms of losses sustained, that encryption is presently economically justified.

Federal Guidelines

Two Federal financial regulatory agencies have developed guidelines for maintaining the security of EFT systems in all three components.¹⁶ These agencies have not yet issued regulations because they wish to permit depository institutions to experiment in a flexible and unrestricted environment, an approach that the Commission endorses.

The FHLBB has established a requirement that Federal savings and loan associations must submit a detailed description of security measures being designed for all RSU projects. The Board conditions all approvals of new or modified projects on compliance with any procedures that it may impose with respect to a system's operation and security. Specific areas covered by the standard approval resolution include bonding, insurance, minimum physical requirements, customer instruments, system design, and operation procedures.

Specific requirements of the Board's approval process include: the instrument utilized to access any remote terminal must be machine readable and may not be in the form of a passbook; merchant-operated terminals shall not disclose account numbers and PINs to retailers; and adequate procedures must be adopted for protection against fraudulent or unauthorized use of account holders' PINs and cards and against unauthorized access to the system.

The Office of the Comptroller of the Currency has issued a guideline suggesting that on-line data transmission between terminals and the central computer should be protected from spoofing, wire-tapping, message insertion and modification, and surveillance.¹⁷ In addition, some 20 other guidelines detail security measures for: audit trails for electronic cash registers, the encoding and distribution of PINs and plastic cards, the off-line/on-line environment maximum amount (dollars

¹⁵ U.S. Department of Commerce, National Bureau of Standards, "Data Encryption Standard," FIPS Pub 46 (January 1977). If encryption becomes universally employed in an EFT environment, it will be necessary to develop and implement an effective encryption key management program. Such a program will be the next major step forward in technological advancement of the EFT state of the art.

¹⁶ Comptroller of the Currency, "EFTS Guidelines" (April 15, 1977). FHLBB, "Remote Service Unit Approval Criteria" (July 1976).

¹⁷ One currently available method for providing such protection is message encryption.

and total number of uses) of withdrawals from automated teller machines, physical security controls, servicing, multibank switching environment, shared environment, and insurance and bonding.

All Federal financial regulatory agencies stress the critical role of the internal bank audit function. Long-standing Federal agency security regulations already establish reasonable safeguards, and security examinations ensure that depository institutions are complying with these regulations. The security examination assesses the effectiveness of the institution's internal audit process.

Federal regulatory agencies are also cooperating to develop a methodology for implementing an effective security program that includes the following activities:

- Enlarging the data base of reported cases of computer crime, including more in-depth investigation of the legal aspects of those cases.
- Assessing the danger and cost of computer crime relative to the degree of current and future control.
- Calling for mandatory prosecution for computer crimes, a compulsory minimum penalty for those convicted, and detailed records of those prosecutions.
- Developing and using the computer itself as a tool to help control, prevent, or reduce direct abuses.

RECOMMENDATIONS

The Commission was deliberately cautious in making recommendations that might be needlessly or even harmfully restrictive in the constantly evolving EFT security environment. The Commission found that State and Federal regulatory agencies are coping adequately with EFT security problems and that they should continue to monitor EFT developments closely. Those concerned must be both alert and flexible in meeting the challenge of maintaining effective security in the future.

Regulation

The Commission foresaw a network of EFT institutions and facilities that could be shared, accessed, managed, or controlled by institutions subject to different chartering and regulatory authority. Consistency of regulation among commercial banks, savings and loan associations, and credit unions, would be highly desirable.

The Commission recommends that State and Federal financial regulatory agencies should develop uniform security regulations and examination requirements for all participants in shared systems involving different types of depository institutions. (Unanimous voice vote in favor.)

The Commission also recommends that all State and Federal financial institution regulators should consider joint solutions to common problems of security supervision. Agencies should continue to coordinate to fund research and educational programs for the development of effective financial

institution security measures. After consultation with the other regulators, each agency should then issue its own regulations and guidelines. (Unanimous voice vote in favor.)

Many nonfinancial institutions, including general merchandise retailers, supermarkets, specialty chains, oil companies, airlines, and hotel/motel chains, have or will have point-of-sale systems and networks designed for their own needs. These systems are used for various proprietary purposes, such as sales and inventory data collection, reservations of hotel space or airline seats, merchandise delivery, and proprietary credit card authorization. Such systems may provide one or more EFT-related services, but they are not fundamentally EFT facilities. As suggested in Chapter 5 with respect to terminals, the Commission concluded that these systems, including terminals, networks, and message switching equipment, should not come under the direct supervision of the various depository institution regulatory agencies.

Nevertheless, these regulatory agencies properly have an interest in the security aspects of such systems that interface with EFT facilities of financial institutions. Necessary security features can be specified and enforced through contracts between nonfinancial institutions providing EFT-related services and the financial institution with which they interface. These contracts should include a provision that the agency regulating the financial institutions involved have the right to monitor--through the financial institution--the security provisions of such contracts.

Therefore the Commission recommends that in regard to the security of EFT systems, State and Federal regulators of financial institutions should concern themselves with the functions of nonfinancial institutions in the EFT environment only as necessary to ensure the safety and soundness of the financial institutions involved, and then only indirectly through regulatory control of the relevant security terms within the contract between nonfinancial and financial institutions. (Unanimous voice vote in favor.)

Legislation

In consultation with U.S. Department of Justice officials and computer security experts, the Senate Committee on Governmental Affairs conducted a study of computer crime statutes.¹⁸ The study shows that most existing laws used to prosecute persons charged with white collar computer crime were written before the computer came into existence. Efforts to combat modern electronic crime under these statutes have been only partially successful.

The Commission recommends (unanimous voice vote in favor) that State and Federal criminal codes should be explicitly strengthened where necessary to prohibit the following:

- *Introduction of fraudulent data into a computer system.*

¹⁸ *Committee on Government Operations, U.S. Senate, "Staff Study of Computer Security in Federal Programs" (February 1977).*

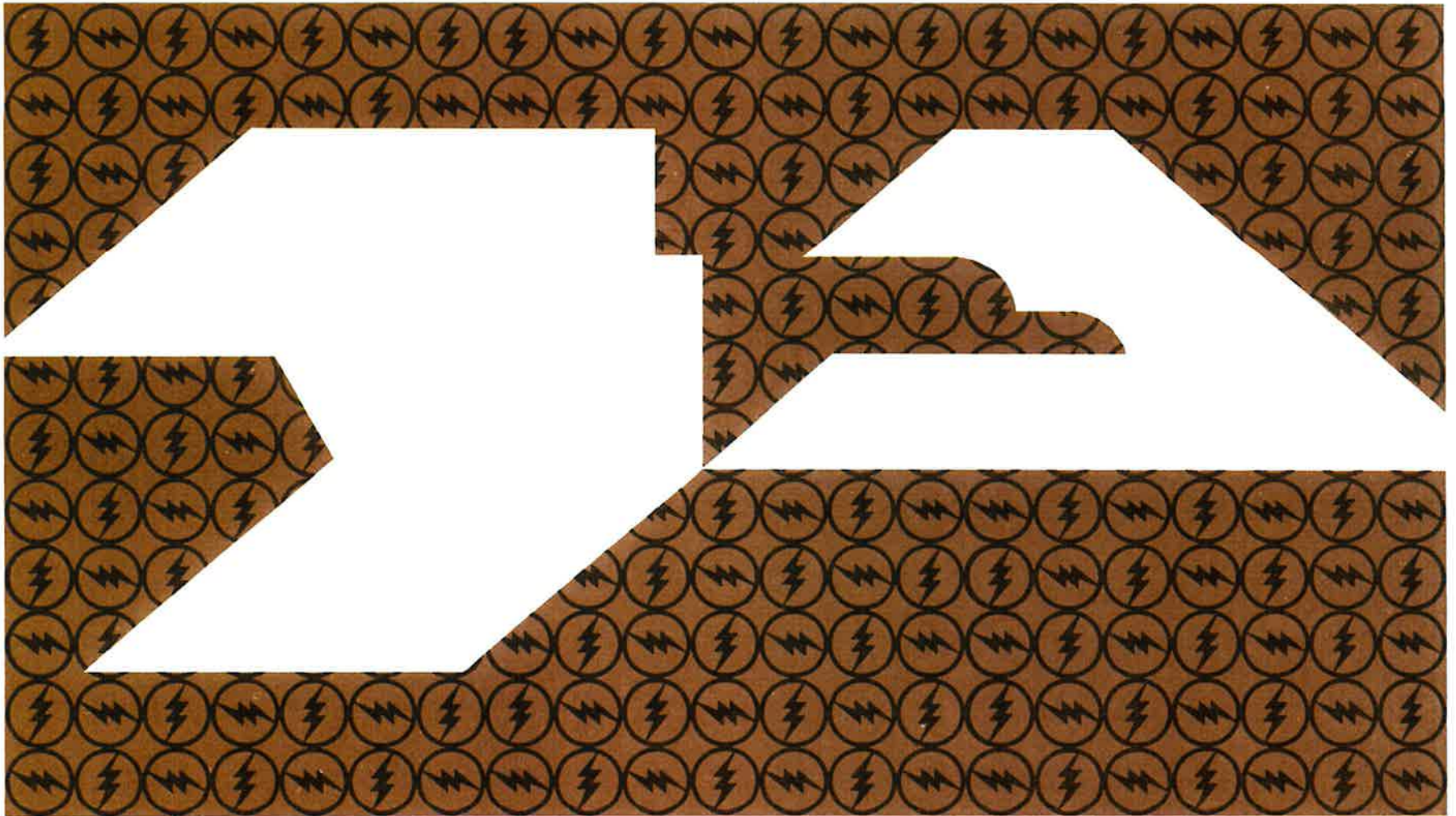
- *Unauthorized use of computer related facilities.*
- *Fraudulent or malicious alteration or destruction of computer data, information, or files.*
- *Theft, by electronic means or otherwise, of money, financial instruments, property, services, software, or data.*

Legislation has been proposed that includes these prohibitions.¹⁹

¹⁹"Federal Computer Systems Protection Act of 1977," S1766, 95th Congress. Hearings are scheduled for early 1978. Existing "bad check" laws generally make it a crime to issue a check knowing that it will not be paid. One effect of this Commission recommendation would be to extend that principle to EFT.

Roles of the Federal Government in EFT

Part V





Chapter 13

EFT and Monetary Policy

In response to its Congressional mandate, the Commission established a program of inquiry into the potential impact of EFT on monetary policymaking. The program included research, consultations with the staff of the Board of Governors of the Federal Reserve System and of several Federal Reserve Banks, and review of papers commissioned from experts.¹ This chapter presents the Commission's conclusions and recommendations regarding the impact of EFT on monetary policy in the United States.

The Commission found no evidence that EFT will impair the effectiveness of current methods of monetary management. This is not to suggest that problems for monetary policy will not be raised by EFT. The pace of EFT development to date, however, indicates that the Federal Reserve, other Federal regulatory agencies, the Congress, and the States will have ample time to adjust monetary policies and regulations to accommodate EFT. This chapter explains how problems in monetary management might arise in an EFT environment and suggests policies for dealing with them.

EFT AND THE PAYMENTS SYSTEM

As mentioned in previous chapters, the emerging EFT system in the United States will not fully replace the system of cash and check payments that has evolved over the past century. Electronic payments and especially electronic credit transfers, however, will increasingly become alternatives to cash and

¹For background to this chapter, see National Commission on Electronic Fund Transfers (NCEFT), "Electronic Funds Transfer and Monetary Policy," Internal Working Document IWD-23 (August 18, 1976). Outside experts consulted were Dwight M. Jaffee (Princeton University); Edward J. Kane (Ohio State University); Allan H. Meltzer (Carnegie-Mellon University); William L. Silber (New York University); Edward J. Stevens (Federal Reserve Bank of Cleveland); and Donald P. Tucker (Federal Reserve Board). See NCEFT, "Electronic Funds Transfer and Monetary Policy: Compendium of Papers Prepared for the National Commission on Electronic Fund Transfers," IWD-33 (January 1977). These papers were reviewed and criticized by external experts and by the

paper systems for consumers, businesses, and depository institutions. Indeed, the EFT systems operating today are only modest forerunners of an electronic payments network that is likely to carry a substantial portion of the Nation's payments volume in coming decades.

As EFT systems develop and as the volume of electronic transactions increases, consumers, businesses, and depository institutions will witness major changes in the character and use of alternative payment methods. Examples include the following:

- A substantial reduction in both the cost and the time required to complete most payments transfers.
- Increased use of credit transfers and on-line transactions and a consequent reduction of float that arises from delays in mail delivery, time required for paper processing at depository institutions, and the inability of the Federal Reserve to meet its time schedule for credits and debits.
- Competition among banks and between banks and other depository institutions will increase because of the diminished importance of geographic market boundaries, broadened product lines, the increased ease of account shifting, and the greater ability of nonbank depository institutions to participate in the third-party payments system.
- A large volume of card-related debit and credit transactions.

- Direct electronic deposit of payrolls, Social Security payments, and other income items.
- Allocation of funds by consumers and businesses to take advantage of interest rate differentials among accounts and instruments offered by depository institutions and non-depository financial institutions as a consequence of the reduced cost and time required to shift asset holdings into forms that can be used for payments.

MONETARY MANAGEMENT

Because the Federal Reserve has no direct way of controlling employment, Gross National Product (GNP), and price levels, it must exert its stabilizing influence on the economy indirectly through actions to control the volume or price of money and credit. To accomplish specific economic goals, the Federal Reserve attempts to influence one or more "target" variables: monetary aggregates, interest rates, or credit aggregates.²

¹Continued

Commission. The external reviewers were Lester V. Chandler (Princeton University) and Donald P. Jacobs (Northwestern University). See NCEFT, "Electronic Funds Transfer and Monetary Policy: Evaluation and Synthesis of Papers Prepared for the National Commission on Electronic Fund Transfers," IWD-34 (January 1977).

²*Examples would be, respectively, the sum of currency and demand deposits held by the nonbank*

Judgments vary as to the comparative merit of one or more interest rates, monetary aggregates, or credit aggregates as monetary targets, and economic and financial conditions affect the choice and mix of targets at any given time. In recent years increased attention has been given to the monetary aggregates. Assuming that the emphasis is on use of monetary aggregates as targets, successful monetary policy requires workable definitions of such aggregates that are clearly linked to ultimate goals, such as aggregate economic activity and prices. These monetary aggregates must also be subject to effective control by the Federal Reserve.

Of crucial importance to effective influence over the level of economic activity is the stability and predictability of the public's demand for money, or what comes to the same thing, the income velocity of money.³ The more unpredictable the demand for money, the more difficult it is to forecast how the public will respond to changes in the supply of money and, thus, how such changes will affect economic activity and prices.

EFT AND MONETARY POLICY

The impact of EFT on this country's monetary policy depends chiefly upon whether the proliferation of EFT systems and service arrangements will contribute significantly to the existing difficulties of developing practical working definitions of the monetary aggregates. All current definitions of money include currency and demand deposits, and some include other transaction accounts such as NOW accounts and any other assets that can be readily converted into such payments media. Recent financial and regulatory

innovations have been increasing the number of "near money" assets, such as money market mutual funds, and the evolution of EFT systems--by virtue of their effects on the time, cost, and convenience of transactions--may facilitate the conversion of additional types of assets into monetary assets.

Arthur Burns, Chairman of the Federal Reserve Board, addressed the issue of financial innovation and the growth of money-like assets in testimony before the Committee on Banking, Finance, and Urban Affairs of the House of Representatives on Feb. 3, 1977, as follows:

. . . changes in financial markets . . . have served to reduce reliance on demand deposits for handling monetary transactions. Recent financial innovations have important implications for the

²Continued

public (M_1), the rate of interest charged on inter-bank loans (the Federal funds rate), and the "credit proxy" (total member bank deposits subject to reserve requirements, plus Eurodollar borrowings and loans sold to bank-related institutions, and certain other non-deposit items).

³The income velocity of money is defined as the number of times the average dollar is spent on final goods and services or GNP. It reflects the public's desire or demand to hold money balances relative to its expenditures or income. The greater the public's demand to retain money balances between successive transactions, the lower the annual velocity, and vice versa.

conduct of monetary policy, and it may therefore be worthwhile to comment on them.

Elements of the innovational process currently under way in financial markets can be traced as far back as the early 1950's. When interest rates rose during the cyclical upswing of 1952 and 1953, some large corporations began to invest their spare cash in Treasury bills. In subsequent years, more and more firms increased their efforts to develop better systems of cash management, so as to minimize holdings of demand deposits which--under existing law--bear no interest. In time, individuals began to emulate business practices--by shifting idle funds into liquid market securities or savings deposits.

As a consequence, the innovational process has accelerated. An array of new financial instruments and practices has developed that has enabled the public to hold an increasing fraction of its transactions balances in interest-bearing form.

For example, the so-called NOW accounts have grown steadily in the New England States, and they serve effectively as checking accounts for many individuals. Smaller businesses and State and local governments nowadays hold a significant part of their cash balances in the form of savings accounts at commercial banks--

which only recently were granted authority to accept such deposits. Moreover, many individuals are learning to use savings accounts for transactions purposes by making payments through third-party transfer arrangements, or by telephonic transfers of funds from savings to demand deposits to cover newly written checks. Others are using money-market mutual funds for the same purpose. And still others have worked out overdraft arrangements with their banks to reduce the amount of funds held in demand deposits bearing no interest.

In projecting its monetary growth ranges, the Federal Open Market Committee has had to keep these developments of financial technology carefully in mind, because they affect the rates of growth of monetary aggregates that are needed to sustain economic expansion.

The Commission recognized the importance of the problem of defining money for policy purposes. Moreover, the Commission concluded that the widespread adoption of EFT systems and service arrangements may significantly affect the rates of growth of monetary aggregates, especially during the introduction of and adaptation to these innovations. Public demand for the narrowly defined money stock, M_1 (currency plus demand deposits), may become less stable as EFT increases the opportunities for earning an explicit interest return on balances available for virtually immediate disbursement, or causes depository institutions to require balances as the price of account services. The Commission also concluded that the

development of EFT in the present regulatory environment will almost certainly decrease the amount of currency held by households relative to the value of their transactions. Households will increase their use of pre-authorized payments, bill-checks, and debit and credit cards at point-of-sale (POS) terminals. Moreover, with currency easily available at cash-dispensing machines, automated teller machines (ATMs), and POS terminals, the consumer can be expected to withdraw currency more frequently but, on average, in smaller amounts.

As the efficiency of money is enhanced by EFT, the desire to hold demand deposits will depend increasingly on two factors: whether the legal prohibition of interest on demand deposits is retained, and the extent to which NOW accounts are permitted. If the prohibition is retained, demand deposits are likely to continue declining in importance. Consumers can be expected to shift to orders on interest-bearing accounts for payments and to shift other interest-earning assets into demand deposits for the purpose of immediate payment. However, if the prohibition of interest on demand deposits were eliminated and if depository institutions priced their transaction services more explicitly, the public's demand for such deposits might not tend to decrease relative to the demand for other assets.⁴

If interest-bearing NOW accounts were approved, non-interest-bearing household demand deposits at banks would tend to be shifted into NOW accounts. Moreover, nonbank depository institutions, such as savings and loan associations, mutual savings banks, credit unions, and industrial banks, would be able to engage directly in third-party payment services without having to arrange for the transfer of savings

account balances to some form of direct payment account.

The tendency of money holders to shift holdings from cash and non-interest-bearing checking accounts to interest-bearing alternative assets varies directly with the yields available on earning assets. As EFT expands the opportunities for investing non-earning transaction balances, the interest sensitivity of demand for the M_1 aggregate is likely to increase. A policy of restricting the growth of M_1 , with a consequent increase in interest rates, is likely to reduce further the demand for the M_1 aggregate (increasing velocity more) and making it more difficult to achieve the policy objective of restricting the growth of spending.⁵ In any case, the relationship between the M_1 aggregate and income could be much less predictable.

⁴It should be noted that the prohibition of explicit interest has led to implicit payments on demand deposits in the form of "free" services. These returns in the form of services are not taxable; therefore, their value to bank customers could considerably exceed the cost to the bank of providing the services. This is a rather inflexible method of providing returns on demand deposits. Particularly in periods of high interest rates, this practice may accentuate the problems of monetary management that the Commission identified.

⁵This assumes that the implicit rate of return on demand balances does not vary with market interest rates. If, instead, the rate paid on demand deposits varies with market rates, the effectiveness of monetary policy actions may not be affected.

The same argument applies, although with less force, to any asset whose rate of return is controlled below market rates. If there are times in the business cycle when the rates of return on nearly all deposit liabilities customarily purchased by consumers and small businesses are held below market rates by Regulation Q ceilings, EFT would make it easier for households and businesses to convert their deposit liabilities into other liquid assets. Whenever the rates paid on the liabilities that constitute M_1 , M_2 , and M_3 are, with risk differences considered, low relative to other market rates, the demand for them will tend to fall, and their velocity will increase.

Another possible evolutionary solution to the problem of using monetary aggregates for policy targets may come about as a result of changes in the definition of M_1 or in the shift of emphasis from M_1 to some broader monetary aggregate that demonstrates a more stable and predictable relationship to the goals of monetary management.

RECOMMENDATIONS

The Commission emphasizes that the relationships between EFT and the trends described above will lead to evolutionary, not revolutionary, changes in the Nation's payments system. With this in mind, however, and without attempting to define the most appropriate monetary aggregate for the purpose of monetary management, the Commission has concluded that the following recommendations will help ensure that anticipated institutional arrangements do not make the introduction of EFT more destabilizing than it need be.

The Commission recommends that a return in the form of interest should be permitted on liabilities that are held for transaction purposes at all depository institutions. Because of present restrictions on offering transaction balances by some nonbank depository institutions, the approval of NOW accounts for households for all depository institutions appears to be the best approach to achieving this result. (19-1-4)

The Commission concluded that the continuation of non-interest-bearing reserve requirements, at a time when EFT and other financial and regulatory changes are increasing the number of payments instruments and money substitutes, may compound monetary stabilization policy problems. Although extending reserve requirements of the Federal Reserve to transaction account balances of nonmember banks and other depository institutions would reduce slippage in the implementation of monetary policy, such an extension would cause other problems, and the Commission took no position on this matter. Because non-depository financial institutions are not subject to reserve requirements they tend to enjoy an artificial competitive advantage in obtaining funds, particularly during periods of high interest rates.

To deal with this problem the Commission concluded that the matter of non-earning reserve requirements should be redressed. *Therefore, the Commission recommends that the Federal Reserve should be permitted to pay interest on reserves held by member banks or held by any other depository institution at a Federal Reserve Bank. (13-2-8)* This step will tend to improve the Federal Reserve's control over the monetary aggregates and increase the stability between the monetary aggregates and target variables. By lowering the cost of maintaining reserve balances

by the payment of interest, the Federal Reserve's control over transaction balances will be enhanced because a larger portion of the reserve base will be directly subject to reserve requirements.

In addition, it will permit banks and other depository institutions to compete better with market instruments and the liabilities of non-depository financial institutions, particularly when rates of interest are high, and thereby will enhance the stability of the demand for the monetary aggregates.



Chapter 14

Government Operation of ACHs and POS Switches

The Commission was instructed to take into account in conducting its study of EFT systems:

the need . . . to assure Government regulation and involvement or participation in a system competitive with the private sector be kept to a minimum.¹

As part of its response to this Congressional requirement, the Commission identified and addressed the issues involved in the Federal Government's role in automated clearing house (ACH) operations and point-of-sale (POS) switching facilities: the former because the Federal Government already has a substantial operational involvement in ACHs through the Federal Reserve, and the latter because of concerns on the part of some that there is a natural technical and organizational progression from the provision of ACH services to the provision of POS services, and on the part of others that Government involvement is necessary to ensure equitable development.

The Commission focused on two primary questions regarding the role of Government in the operation of

EFT systems. The first is whether the Federal Reserve should continue to operate ACHs. A subsidiary question, assuming the Federal Reserve should provide ACH services, is for whom it should provide these services and how it should charge for them.

The second major question is what operational role Government ought to have, if any, in the operation of POS switches. The two questions are related, but in the Commission's view the answers are quite distinct.

AUTOMATED CLEARING HOUSES

The automated clearing house concept originated in April 1968, with the establishment of the Special Committee on Paperless Entries (SCOPE) by the Los Angeles and San Francisco Clearing House Associations. SCOPE was established to study the possibility of reducing the need for banks to handle

¹Pub. L. 93-495 (Oct. 28, 1974), Section 203(a)(2); 12 U.S.C. 2403.

paper checks in the clearing process, which was becoming increasingly expensive. Later that year, the American Bankers Association formed the Monetary and Payments System Planning Committee (MAPS) to study ways to improve the cost and efficiency of the payments system. In 1971, MAPS recommended that local and eventually national automated clearing mechanisms be developed.

By 1972, SCOPE had developed a computer software package and a set of operational rules. In October 1972, the California Automated Clearing House Association (organized by a group of commercial banks in California) began operations, followed seven months later by the Georgia Automated Clearing House. These early developmental efforts provided the basis for the establishment in 1974 of the National Automated Clearing House Association (NACHA). NACHA was created to promote the ACH concept and to establish rules and standards for the exchange of payments between ACHs. NACHA also licenses to its 32 member associations the software package used for processing ACH payments.

An ACH mechanism involves the following participants: the private ACH association, the originating and receiving depository institutions, corporate and individual customers, and the Federal Reserve. An ACH association is a group of private depository institutions that has agreed to abide by certain rules and procedures for the purpose of exchanging payments on computer tape. Originating depository institutions receive instructions from corporate customers to pay out or collect funds from their customers who have elected to participate in a program of direct transfer. The originating depository institutions deposit these instructions on magnetic

tape with the ACH facility. ACH facilities are located on the premises of Federal Reserve offices (except the ones in Chicago and New York, which are privately operated). The ACH facility processes the information and delivers magnetic tapes or descriptive paper listings to the receiving depository institutions, which debit or credit the accounts of participating customers.

The services offered by participating depository institutions using ACH facilities are direct deposit of payroll and preauthorized bill payments, such as mortgage and utility payments and insurance premiums. The facilities are used to process the direct deposit of Federal recurring payments, such as Social Security payments and Air Force payroll. For these payments the rules, procedures, and time schedules are established by the U.S. Department of the Treasury and the Federal Reserve rather than by the private ACH associations. At present, there are 29 operational ACHs processing commercial payments, with three more planned by 1978. In August 1977, the Federal Reserve processed about 834,000 commercial ACH payments and 7.3 million Federal recurring payments.

ACH Associations

Because common rules applicable to all depository institutions are necessary for the successful implementation of an ACH, ACH associations have been formed. ACH associations are in some respects the counterpart of bank clearing house associations, and are generally nonprofit corporations. The owners of the corporation are the depository institutions that have agreed to abide by the rules, regulations,

bylaws, and fee schedules of the association. The association rules contain provisions relating to membership requirements, warranties and liabilities of participants, consumer rights, and operational and procedural matters. To ensure consistency with Federal Reserve regulations and policy guidelines, ACH associations that use the Federal Reserve facilities for processing consult with the Federal Reserve bank concerning the establishment of the operating rules of the association.

The costs to the depository institutions involved (excluding the Federal Reserve) for establishing an ACH association--for example, organizational, promotional, and legal fees--have ranged from \$75,000 to \$156,000. Total start-up costs for all depository institutions in an ACH, which include marketing, computer programming, and employee training, have ranged up to \$1 million. Ongoing costs for an association, which include staff salaries and marketing fees, range from \$50,000 to \$150,000 per year. ACH associations generate revenue to cover these costs through initiation fees and annual dues and transaction charges.

Although the ACHs currently operating have their own organizational components (budgets, business plans, usage patterns, etc.), all have chosen to use Federal Reserve facilities to meet at least some of their operational needs in the areas of clearing, delivery, and settlement. The role of the Federal Reserve in each of these areas is discussed below.

Role of the Federal Reserve²

ACH operations parallel check-clearing operations in many respects, except that ACH payment

²Federal Reserve operational involvement has raised a number of technical and policy questions of concern to depository institutions, as well as to various private organizations and Government agencies. In November 1973, the Board of Governors issued for comment proposed revisions to its Regulation J (Regulation J deals with the collection of checks through the Federal Reserve System) that would provide standards for liability of the parties using Federal Reserve facilities for ACHs, and asked for comments on the appropriate ownership and operational roles of Government and the private sector. 38 Fed. Reg. 32952 (1973). After considering the comments received, the Board of Governors revised its proposed regulations and reissued them for comment on Jan. 15, 1976. 41 Fed. Reg. 3097 (1976).

Two months later, the Board stated that it would postpone action on its proposed amendments to Regulation J until this Commission had the opportunity to consider the issue. Letter from Mr. Theodore E. Allison, Secretary of the Board of Governors, Federal Reserve System of Mar. 10, 1976, to Chairman William B. Widnall. The Commission responded that it had determined not to comment on the proposed regulations of any State or Federal agency until it felt prepared, as a result of its investigations and accumulated data, to take a position. In addition, the Commission also stated that it hoped to make recommendations on a number of the policy

information is exchanged on magnetic tape instead of paper checks. The Federal Reserve plays somewhat similar roles in the two types of operation. Federal Reserve banks that operate ACHs receive private sector-originated ACH payment items on tapes from any member bank and from any member of an ACH association, including thrift institutions. The Federal Reserve banks deliver private sector items to member banks and members of the ACH associations under published guidelines.³ For Federal recurring payments, the Federal Reserve acts as the fiscal agent for the Government and, in this role, provides clearing, settlement, and delivery functions under different rules established in cooperation with the U.S. Department of the Treasury. The rules provide for the delivery of these payments to all depository institutions, whether or not they are members of an ACH.

The services of clearing, delivery, and settlement for ACH payments are currently provided by the Federal Reserve without any explicit charges to the depository institutions using these services. This is also true of Federal Reserve check-clearing operations.

The Federal Reserve was able to implement ACH processing with minimal cost increases because it was able to use the same computer and delivery systems that it uses to process and deliver paper checks. In addition, the Department of the Treasury uses the same Federal Reserve facilities to process Treasury payments made by means of computer tape. The relevant Federal Reserve computer systems are not substantially different from those used to process checks in most large banks and many service companies. The check delivery system is a tariffed

offering leased by the Federal Reserve from private couriers. Thus, the components of the Federal Reserve-operated ACHs are available from the private sector. However, the Federal Reserve banks, acting as fiscal agents for the Federal Government, process a significant number of recurring Government payments. Because there may be increasing returns to scale in processing such recurring payments, and because the Federal Reserve banks operate a transportation system for the delivery of checks and Government payments to the great majority of banks in the country every business day, the total cost to society in real resources may be lower if the

² *Continued*

questions presented by Regulation J, particularly pricing of and access to Federal Reserve facilities. Letter from Chairman Widnall of Apr. 1, 1976, to Mr. Allison.

The Board issued Subpart B of Regulation J on June 16, 1977. As adopted, Subpart B establishes rules for member banks using the Federal Reserve Communications System to make wire transfer of funds; however, it does not establish rules for ACH transactions, regardless of whether those transactions are eventually sent over the Federal Reserve Communications System. 42 Fed. Reg. 31763 (1977).

Subpart C, which will cover ACH transactions passing through the Federal Reserve Communications System, is expected to be reissued for comment by the Board.

³ 41 Fed. Reg. 3097 (1976).

Federal Reserve banks also provide ACH facilities for private sector payments.

Plans for the Future

The ACH was designed to handle debit and credit transfers where depository institutions receive instructions from corporate customers to pay out or collect funds from consumers. Another type of transfer processed by an ACH is that in which the consumer instructs the depository institution to make payments on his behalf.

A third type of transaction that could be cleared and settled through the ACH mechanism is a "value-dated" payment made at the point of purchase.⁴ The data for such a payment would flow from a terminal located at a retail establishment to a depository institution. The depository institution would record the payment instructions on magnetic tape for deposit at an ACH. The ACH would clear and settle the payment on the date contained in the instructions.

Currently, commercial ACH payments are exchanged within a Federal Reserve district by physically transporting magnetic tapes and are not exchanged between ACHs in different Federal Reserve districts (Government electronic payments are distributed nationwide), with the exception of a pilot test using the Federal Reserve's telecommunications network to exchange payments among ACHs in six Federal Reserve districts.⁵ This interregional test, undertaken at the request of NACHA, began early in 1977, and in August processed 65,000 payments. Some have expressed concern that the Federal Reserve, if it

provides this interregional service on a continuing basis, may preclude the development of private-sector networks. For example, plans are underway for the privately owned and operated Bankwire II system to have the capability of transmitting ACH payments nationwide beginning in 1978.⁶

⁴Value dating, sometimes referred to as effective dating, involves the "ability to communicate accounting data for a transaction for which actual funds will be transferred on a specified future date." See George C. White, Jr., "Future Funds Value Dating: An EFTS Necessity," The Magazine of Bank Administration (April 1975), p. 40. At present, ACHs process and settle pursuant to a 2-3 day schedule that does not permit a value dating different from that in their settlement schedule. NACHA and the Federal Reserve are now upgrading their ACH computer programs to allow for value dating.

⁵Two Federal Reserve districts--Cleveland and San Francisco--are currently using their own district telecommunications network to transmit commercial ACH items within their districts.

⁶Letter from the U.S. Department of Justice of Oct. 4, 1976, to the National Commission on Electronic Fund Transfers, commenting on a draft of NCEFT, "ACHs, POS Switches, and the Role of Government in EFTS," Internal Working Document IWD-14 (October 1976); letter from the New York Automated Clearing House of Sept. 14, 1976, to the Federal Reserve Bank of Atlanta; and personal communication from Bernhard W. Romberg, Bankwire President, Sept. 21, 1977.

SWITCHES FOR POINT-OF-SALE PAYMENTS

An electronic point-of-sale (POS) system is designed to electronically capture and transmit payments information originating at a merchant location. This is accomplished by transmitting a message from a terminal located at a merchant's counter to a data base in a depository institution's computer to accomplish a transfer of funds, or to provide an information service such as verifying or guaranteeing a check or authorizing a draw against a pre-established line of credit.

When, in a POS system, the account record-keeping systems of two or more depository institutions are involved, it becomes necessary to have a switch to route messages to the data centers where the affected accounts reside. This may be done by two general system structures: (1) the switch before the depository institution where the switch is inserted between the terminals and depository institution; or (2) the switch behind the depository institution in which the depository institution is the first stop for any message from a terminal, with the switch having a role only if the institution needs to pass the message, or some part of it, on to another institution.

In addition to routing messages, the switch can be made to perform data processing functions, such as developing net settlement figures, maintaining audit trails, and performing security checks. When the switch is before the depository institution, it also can perform backup services such as transaction authorizations against predetermined limits.

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Because EFT is in the early stage of development, and because the needs of the participants differ from system to system, the design criteria and the resulting system designs can vary greatly.

Differences Between POS and ACH

It is evident that there are some similarities between a POS switch and an ACH system both in the technology used and the functions performed. Both receive funds transfer messages from a number of sources and route them to a number of destinations while developing net settlement figures for the transfer of funds between depository institutions. But there are some significant differences.

First, ACH transactions are pre-authorized by the customer and initiated by the company or are initiated individually by the customer through his depository institution. POS transactions, on the other hand, are initiated individually at an electronic terminal by the customer through a merchant or other terminal operator and usually require immediate and unique authorization by the depository institution where the customer's account resides.

Second, POS systems are developing in local markets where customers do business with a local

⁶Continued

For a description of EPIC, a privately owned cooperative venture proposed by the Chase Manhattan Bank, N.A., for the development of improved delivery schedules for pre-authorized items, see "Payment Systems Action Report" (Aug. 22, 1977).

merchant. Most ACH transactions, such as direct deposit of payroll, are, on the other hand, initiated by companies or government, are initiated in volume, and may entail regional or national distribution. The third major difference is that an ACH operates in a batch mode usually involving the physical delivery of tapes, whereas POS switches are expected to be on-line, real-time systems.

These distinctions are important to the questions of whether the operating mechanisms of an ACH could be employed to operate a POS switch and whether the Federal Reserve's operational role in the ACHs provides an impetus toward Federal Reserve operation of a POS switch.⁷

The Role of Government

A switch for a POS system requires computer resources. One possibility for obtaining these resources is to use the computers and telecommunications facilities of the Federal Reserve banks or other Government agencies. A second option is to use the computers provided by organizations operating in the private sector, whether they be commercial banks, savings and loan associations, independent service bureaus, or other companies that have been developed specifically to provide POS switching services.

The possibility of Federal Reserve or Federal Home Loan bank operation of POS switching facilities is a matter of current debate, and a number of arguments have been made for Government involvement. Government operation of these systems is seen by some as a logical development, particularly for the Federal Reserve, in providing needed technological

improvements to the existing check-clearing system. It is also argued by some who believe that EFT systems are essential to an efficient national payments system that, because of the large scale of EFT systems and the high risks associated with early development, some stimulus and support by Government is appropriate and necessary.

Arguments to the contrary suggest that the private sector is ready, willing, and able to provide some, if not all, parts of such systems and that Government should not become involved until a clear public need is perceived and until the private sector clearly shows its inability to provide the necessary systems.

Both the Federal Reserve and the Federal Home Loan bank systems have declined to operate POS switching services in response to specific proposals.

In the case of the Federal Reserve, the request came from the Atlanta Committee on Paperless

⁷ A number of individuals and institutions have expressed a concern that ACH facilities may become the hub of POS systems. See Comments of the U.S. Department of Justice in the Matter of Regulation J--Collection of Checks and Other Items by Federal Reserve Banks (May 27, 1976), pp. 12a-13; James H. Jarrell, "NACHA Policy Issues," speech delivered at the National Operations and Automation Conference, American Bankers Association (June 14, 1976), pp. 7 and 19; Citicorp Comments on the Federal Reserve Board Revised Proposal to Amend Regulation J (March 1976), p. 3.

Entries (COPE). COPE asked that the Federal Reserve Bank of Atlanta contribute \$1.5 million as part of a \$4.5 million project to install a point-of-sale system in Atlanta. The Federal Reserve portion would have been used for a switching and processing center in the Federal Reserve Bank of Atlanta, which supported the proposal.

A letter to COPE from the Federal Reserve Board in June 1974 denied the request, citing that the Board had not yet established its position on the broad policy issues raised in its proposed modifications to Regulation J and that the Senate was actively considering the establishment of this commission to explore the entire subject.⁸ The Federal Reserve, however, did offer to help in the development of standards, the promulgation of rules, the arbitration of disputes, settlement among participating banks, the clarification of issues with regard to the Department of Justice, and surveillance of the experiment.

After the Federal Reserve decision, the five Atlanta banks sponsoring COPE decided not to implement the proposed POS system, and the COPE organization was discontinued in early 1975. Since that time, two separate services using two different approaches have developed in Atlanta to offer check guarantee service at the point of sale. One approach is proprietary and one is a joint project; both involve banks that were members of the COPE organization. As yet no project offers POS funds transfer of the sort anticipated in the proposal to the Federal Reserve.

In Columbus, Ohio, where a proposal had been prepared but never presented to the Federal Reserve

Board, one savings and loan association is now offering point-of-sale transaction services and one bank is implementing POS check guarantee.

The Federal Home Loan Bank of San Francisco's plan to sponsor a pilot electronic message-switching service for savings and loan associations in its district was discontinued in November 1975. The bank had planned to develop and implement the message switching and settlement system portions of the overall EFT system plan of Savings Association Central Corporation (SACC), a joint project of California savings and loan associations. The decision to discontinue Federal Home Loan bank sponsorship came following a letter from the Department of Justice that suggested that the private sector seemed capable of generating innovative and efficient responses to the demands of the EFT market. The Department of Justice went on to suggest a role for the Federal Home Loan Bank Board in monitoring EFTS projects so that "should there arise a need for direct Government sponsorship of EFTS services, the Bank Board will be in a position to meet such a need."⁹

⁸ Letter from Chester B. Feldberg, Secretary to the Board of Governors of the Federal Reserve System of June 10, 1974, to James Jarrell, Chairman, Atlanta COPE.

⁹ See letter from U.S. Department of Justice of Oct. 16, 1975, to the Acting Chairman of the Federal Home Loan Bank Board regarding a FHLBB document entitled, Qualified Vendors Sought to Assist the Federal Home Loan Bank System and

After the decision, the SACC sponsoring organizations decided to continue the project. The SACC switch is in development.

RECOMMENDATIONS CONCERNING GOVERNMENT OPERATION OF ACHS

In many areas, the Commission was in the difficult position of making policy recommendations based on extrapolation from limited experience with on-going systems. With automated clearing houses, however, there already exists an extensive operating structure that the Commission was able to examine to determine if that structure is appropriate for the future.

The Commission considered a substantial amount of fact and opinion in its deliberation on this issue. The following is a summary of the facts and findings that are pertinent to the Commission's recommendations:

- The development of ACH facilities for the electronic clearance of batched, value-dated items offers benefits to the public in terms of decreased cost and increased convenience and security.
- The Federal Reserve has a legal obligation to provide ACH-type services for Federal recurring payments on request from the Government, and is currently doing so.
- The Federal Reserve has agreed to operate ACHs for private sector payments, is currently operating ACHs for the private sector,

and is preparing plans to charge for the private sector ACH operations.

- Federal Reserve banks operate all but two ACHs, and those two are in the two largest financial centers in the country, New York and Chicago. Not more than one ACH exists in any city.
- By a large proportion, most of the volume processed by ACH facilities is originated by the Federal Government.
- Private sector-originated ACH volume, while relatively small, is growing steadily.
- Processing private sector ACH payments in conjunction with Federal recurring payments probably results in lower overall cost per payment, given the large economies of scale in operating ACHs and the relatively small number of ACH payments currently being made.
- Access or membership discrimination against certain classes of depository institutions has existed and may continue in those markets where ACHs are controlled by the private sector.

The Commission considered the following questions concerning the future:

⁹ *Continued*

*Their Member Institutions in the Development of
an Electronic Fund Transfer Switch Capability.*

- Would most ACHs fail without Federal Reserve operation?
- Would the failure of some ACHs be harmful to the national interest?
- Can more than one ACH exist in a market?
- Is the antitrust mechanism sufficient to protect depository institutions from permanent damage?
- Are the concerns of citizens over the potential for Government invasion of privacy in Federal Reserve-operated ACHs well founded?
- If the Federal Reserve continues its ACH operations and charges for them on an equitable and fully allocated cost basis, will private sector ACHs be able to develop in competition with the Government system?

The Commission recommends that it is appropriate for the Federal Reserve to continue to provide the basic level of ACH-type services necessary to clear and settle batched electronic payments between depository institutions locally, regionally, and interregionally. (25-0-0)

The Commission also recommends that the Federal Reserve not discriminate against the private sector development, establishment, and operation of alternatives to Federal Reserve ACH facilities. (22-0-0)

These recommendations were compelled by the Commission's determinations that (1) the development of ACH facilities for the electronic clearance of

batched, value-dated items will lead, in the long run, to a more efficient and effective payment mechanism for the benefit of the public; (2) requiring the Federal Reserve to terminate its operation of ACHs for the private sector at this time might disrupt the development of ACHs and that this disruption would be detrimental to the public interest; and (3) the private sector cannot yet do the job alone.

The Commission also concluded, although this is not critical to its support of continued Federal Reserve operation of ACHs, that Federal Reserve banks are the proper processors of Government value-dated automated payments and that the scale economies in operation are sufficient to justify economically, if not compel, a single operation in each market for both Government and private value-dated automated payments. Because the Federal Reserve has traditionally processed Government payments, and because those payments provide the great bulk of ACH transactions today, it is appropriate for that single operation in each market to be operated by the Federal Reserve. In addition, the function of clearing and settling ACH payments parallels the function of clearing and settlement in the checking system, and the Federal Reserve banks have traditionally performed that function.

The Commission also concluded that Federal Reserve operation of ACHs should continue because the Federal Reserve, through its operation of ACHs, will be able to ensure that all depository institutions have access to ACHs. The Commission concluded that it is the responsibility of the Federal Reserve System, if it is to offer Government

services to private institutions, to ensure that these services are available on a nondiscriminatory basis.

To achieve this result, the Commission recommends that the Federal Reserve should permit all depository institutions to deposit debit and credit items with, and to receive debit and credit items from, Federal Reserve ACH facilities under rules and regulations promulgated by the Federal Reserve and local ACH associations. (22-0-0)

Local ACH associations should have an important role in setting rules, but it is important that these rules not discriminate against types of depository institutions, particularly because, at present, the only way a depository institution that is not a member bank can use Federal Reserve ACH services is to join an ACH association. Some ACH associations continue to restrict membership, voting privileges, or access or to impose other barriers to equitable participation by thrift institutions.¹⁰

Therefore the Commission urges all ACH associations to make available full access and membership to all types of depository institutions.

While most ACH associations use Federal Reserve facilities for both clearing and delivery, two ACH associations use only Federal Reserve delivery and settlement services. The Commission, therefore, took up the question of whether the Federal Reserve ought to offer separately its various ACH services.

The Commission finds that such separate offering is proper, and therefore recommends that the Federal Reserve should make available delivery and

settlement services to private sector ACHs that offer ACH services on an equitable basis to all depository institutions. (22-0-0)

The Commission's decision that Federal Reserve banks should continue to operate ACHs and separately offer these services raises the corollary question of whether Federal Reserve banks should charge depository institutions for ACH services.

The Commission recommends that the Federal Reserve should assess charges on an equitable and fully allocated cost basis to depository institutions using Federal Reserve ACH services, with due consideration being given to balances held by the Federal Reserve. (20-1-1)

The Commission's recommendation in favor of charging was based on two separate tenets. First, as a matter of equity, those receiving the benefits of a Government enterprise, particularly one conducted in competition with the private sector, should pay for those benefits. Second, potential private-sector competitors could be discouraged from entering the market if the Federal Reserve did not charge.

¹⁰ *The Department of Justice recently brought suit against two ACH associations for excluding thrift institutions from membership. See United States v. California Automated Clearing House Association, Civil No. 77-1643-LTL, C.D. Calif. (complaint filed May 6, 1977); and United States v. Rocky Mountain Automated Clearing House Association, Civil No. 77-A-391, D. Colo. (complaint filed Apr. 22, 1977). These cases have not yet reached trial.*

The Commission heard testimony from a number of depository and non-depository institutions that there are private sector alternatives to Government ACHs and that, to the extent ACH transactions are communicated through telecommunications rather than through physical delivery of tapes and paper, these private sector alternatives will become increasingly cost-effective. Further, the Commission concluded that, by charging on an equitable and fully allocated cost basis and hence permitting private sector ACHs to develop in competition with the Government system, it will be possible for the Federal Reserve to withdraw from ACH operation for non-Federal payments, if this becomes appropriate at some future time.

The Commission recognized that pricing for ACH services presents difficulties, aside from the major problem of devising the pricing structure itself.

Charging member banks for Federal Reserve services for which those banks are not now explicitly charged might decrease the attractiveness of membership, thus aggravating a continuing membership problem, and weaken the Federal Reserve's control over the money supply. Yet, not charging members while charging nonmember institutions might be viewed as discriminatory and might discourage private sector entry. The Commission concluded that these problems would be avoided if an equitable pricing structure were devised. If the Federal Reserve does not separately offer and price its ACH services on an equitable and fully allocated cost basis, potential private sector competitors will be discouraged from entering the market. The Commission supported continued Government operation of ACHs, not because it did not favor private sector operation, but

because it concluded that the private sector cannot yet do the job alone.

RECOMMENDATIONS CONCERNING GOVERNMENT OPERATION OF POS SWITCHES

The situation that faced the Commission in addressing the question of Government operation of POS switching facilities was quite different from that involving ACHs. Whereas Government operation of ACHs is an accomplished fact, this is not the case with POS switches. In addition, POS switches do not now exist that exchange value among depository institutions in such a way as to require settlement by the Federal Reserve (however, as POS systems develop, Federal Reserve facilities will be available for settlement purposes between depository institutions). The Commission's primary concern in this area was that premature governmental entry into an operational role in POS switching and clearing would tend to freeze current technology and stifle incentives for innovation in this rapidly evolving area. Even if the Government operated its POS facility free of subsidies, the Commission concluded that its very presence would dampen private sector investment and deter entry by new competitors. Moreover, the Commission was aware of no evidence to suggest that an operational role for Government is necessary at present.

Decisions on the proper Government role in operating POS switches must take place in the absence of substantial experience with the economic and operating characteristics of POS switches. The Commission, however, received sufficient testimony and other evidence to convince it that POS clearing

and switching facilities can continue at present and in the foreseeable future to develop in the private sector without Federal Reserve operational involvement. As discussed above, attempts to gain Government operation of POS switches have been unsuccessful and the Commission did not find any significant private sector movement today to have Government operate POS switches, nor of any Government plans to operate a POS switch.

In both the case of the Atlanta COPE project, a commercial banking-sponsored effort, and the San Francisco Home Loan Bank proposal to build a switch for California savings and loans, the Federal Government, through the Board of Governors of the Federal Reserve and the Federal Home Loan Bank Board, declined to become operationally involved. In both areas of the country, innovative depository institutions have gone ahead and developed POS programs. Although some of these projects are of a smaller scope in both services offered and size of market served than would have been the case with Government involvement, under private management different kinds of systems are developing, testing innovative and varying approaches to the problem of operating profitably an electronic payments system. The approaches to POS should remain many and varied until the market sorts itself out and is better understood in terms of consumer wants, institutional needs, and regulatory guidance.

There are business risks for the firms that enter this market as suppliers or buyers of POS systems. The technology is still subject to rapid evolution. Marketing strategies have not created the needed transaction volumes. The cost-effective solutions are not yet known. But it is nonetheless

clear that the private sector has shown a willingness to serve the market.

The Commission concluded that this is the preferable approach to the development of POS systems. *The Commission recommends, therefore, that the Federal Government not be involved operationally, at present or in the foreseeable future, in POS switching and clearing facilities except for the provision of net settlement among depository institutions.* (15-6-0)

The reasons discussed above for opposing Government operation of POS switches might have been insufficient to impel the Commission's decision had there been compelling countervailing arguments in favor of Government operation.

The chief argument presented for Federal Reserve involvement at this time is that only Government can ensure access on equitable terms to all depository institutions. The Commission concluded that equitable access has not been an insurmountable issue in the few experimental POS systems that are in existence.

Another argument for Government operation is that POS systems should be subsidized by Government to provide users with convenient and cost-effective alternatives to the paper-based payments systems. No compelling evidence favoring this position has been heard. Under present conditions, cost savings from use of POS systems appear to be some years in the future, in light of the large transaction volumes required for successful implementation. In addition, there is no evidence that the American

public is demanding POS alternatives faster than can be provided by the private sector.

The Commission, however, recommends against foreclosing completely at this time the possibility that, at some future point, it may become appropriate to have a Government operational role in POS switching and clearing facilities, either to correct market imbalances that might develop, or to ensure an efficient and effective national payments system. (15-6-0)

The Commission considered several circumstances in which Government operation of POS switches might be appropriate. The first would be if the check system were becoming overloaded and Government resources were necessary for rapid development of an alternative electronic payments system. Although the check system is labor-intensive and expensive, it is currently viable and the Commission saw no need for the Government to force the pace of POS development.

Government also might appropriately have an operational role if POS were a major part of the Nation's payments system and some portions of the country were unable to support POS switches, to the detriment of their economies. In that case, Government might serve as a provider of last resort, and operate the low-volume switches.

Finally, POS switches may develop such economies of scale as to render them natural monopolies. If this were to occur, the alternatives would be for Government either to regulate them as public utilities or to operate them directly, and Government operation might be the appropriate choice. But until

there is more experience with the economics of POS systems, neither course is required.

At some future point these circumstances may develop, compelling congressional consideration of possible Government operation of a POS switch. At such time, the Congress may wish to consider the above discussion as well as several other concerns that have been formally brought to the Commission's attention. The first is that any agency that regulates institutions may have a conflict of interest if it chooses to act as an operator of systems that compete with those provided by institutions it is regulating. According to some observers, this is not a new problem because depository institution regulators have for many years provided services that can be used by, and that in some cases are similar to, services provided by the institutions they regulate. However, these conflicts can be lessened by having the agency, in its internal organization, separate its operational functions from its regulatory functions, or by assigning the operational role to an agency without any regulatory responsibilities.

The second matter that has been offered repeatedly as a concern is the implications that Government operation of POS switches might have, or be seen to have, for individual privacy. As discussed in Chapter 1, the consumer's right to privacy in an EFT environment is a major concern that has been explicitly voiced as a concern about Government access to depository transaction data on individuals.¹¹

¹¹ *The Commission's recommendations concerning the privacy protections that should be afforded to*

It was argued before the Commission that operation of a POS switch by a Government agency would offer greater dangers to privacy than would private operation because it would remove the barriers that a private or quasi-private operation might raise to Government access to transaction information flowing through the switch, and it might lessen an individual's ability to raise any available legal defenses against a Government agency seeking access to his financial records. Although these privacy concerns may never be realized, they should be considered as part of any future decisions on Government operation.

Finally, in considering what should be the proper operational role of Government and the basis for the Commission's decision to support an operational role in ACHs but not in POS switches, it should be kept in mind that a Government regulatory role is appropriate in many circumstances where an operational role is not. In particular, the Commission concluded that Government, Federal and State, should continue its regulatory role of depository institutions involved in POS operations to ensure that:

- The public interest is protected in such areas as privacy and other consumer interests.
- The private sector provides equitable access to EFT systems in accordance with antitrust principles.

¹¹Continued

ACH transaction data handled by the Federal Reserve are contained in Chapter 1, "Privacy."

International Developments in EFT





Chapter 15

EFT in Other Industrial Nations: Observations and Implications

The Commission reviewed payment systems used by other industrialized nations and compared features of those foreign systems with the payments system of the United States. The purpose of the inquiry was to investigate the application of electronic technology to payment systems elsewhere in the world and the responsiveness of such technology to consumer needs. In addition, the approach of other countries to issues such as privacy, sharing, and governmental regulation has practical relevance because it provides experience-tested precedents on specific issues before the Commission.

This chapter discusses the Commission's understanding of the foreign payments systems that were studied and presents comparisons with the system used in the United States. It also presents Commission observations and recommendations for changes that should be made in the system in this country.

INTERNATIONAL SYMPOSIUM

To obtain information about foreign payments systems and international payment practices, the

Commission invited financial industry representatives from many industrialized nations and their counterparts in the United States to attend a five-day International Symposium held in Washington, D.C., and New York, N.Y., in June 1977.¹ Participants included representatives of commercial banks, savings institutions, central banks, a postal Giro,² and

¹Countries represented at the Symposium included Austria, Belgium, Canada, Denmark, Finland, France, Germany, Great Britain, Italy, Japan, Mexico, New Zealand, Norway, Sweden, Switzerland, and the United States. For a detailed report of the proceedings, see National Commission on Electronic Fund Transfers, "June 1977 International Payments Symposium," Internal Working Document IWD-55 (to be published).

²A Giro system is defined as a payment method in which the payor instructs a financial institution to make a direct payment to a payee. The financial institution may accomplish this by transferring funds from one account to another or by physically delivering the payment.

other foreign government agencies engaged in payment operations. A discussion of highlights of the symposium follows.

Giro System

Coin, currency, checks, and drafts are in common use in all of the industrialized nations represented at the symposium. The most distinctive feature of Western European payments systems is the extensive use of the Giro, or credit transfer, payment facility. These Giro systems provide convenient consumer and corporate services and are widely used along--and in competition--with checks.

The basic differences between the check and the Giro transfer are in the routing of the payment order, the role of the depository institution, the information carried by the payment order, and the certainty of funds availability for the recipient of the funds.³ In the case of the check, the payor is the originator of the item and either presents it directly to the payee or mails it to the payee, who, in turn, deposits it in his depository institution for collection. The availability of funds is uncertain until the check is presented to the payor's depository institution for collection. For example, there may not be sufficient funds in the account to cover the check, in which case the check is returned to the payee's depository institution with notice of insufficiency of funds. In the Giro system, the payor provides instructions, usually in writing or by telephone, to his depository institution, or to the post office in the case of a postal Giro system, to debit his account and to transfer funds to the account of the payee. The transfer normally is not initiated

unless there are sufficient funds in the payor's account.

Consumer Services

The symposium confirmed the Commission's impression that in many other industrialized countries payment services provided by both the postal system and depository institutions are available to a very broad segment of the public and that in some countries credit transfer technology is used to a greater extent to offer more convenient consumer services. These characteristics appear to result from several factors.

First, the Commission found that many foreign governments have made a substantial commitment to ensure that all consumers are offered an inexpensive and convenient method of making and receiving payments. In a number of countries, for example, the post office offers a wide variety of payment services to the public. As a result, virtually every income recipient has some type of account at a depository institution or at a postal Giro from which payment transactions can be initiated.

Second, the banking industry in most major industrialized foreign countries typically consists of a relatively small number of large, nationwide,

³For detail on Giro, see Richard A. Acello and Fairfax Leary, Jr., "Electronic Giro: Potential for New Dimensions in the United States Payments System," published under the same title as NCEFT IWD-54 (October 1977).

dominant institutions, each having a large number of branches. Cooperative efforts necessary for implementing innovations in the payment systems involve far fewer participants than in the United States. Because there are common interests among these sectors, a technology that is interdependent can be more rapidly implemented.

Third, thrift institutions in most European countries compete on equal terms with commercial banks in offering payment services to the public. In addition, postal Giro systems provide competition for commercial banks and thrift institutions by offering payment services to the consumer.

Similarities and Differences

The Commission's study revealed both similarities and differences between the United States and other countries in methods of making payments. In all countries surveyed, including the United States, cash is the most prevalent method of making payment at the point of purchase. Although checks and credit cards are used extensively in the United States for such retail transactions, they are less common in other countries. In the United States, consumers generally pay most of their recurring bills by check. In foreign countries, however, it is common for consumers to pay recurring bills such as mortgage, utility, and insurance payments under standing orders that authorize the bank to charge a consumer's account automatically on predetermined dates and to transfer the amounts to the appropriate payees. Paying bills in this manner reduces postage and the inconveniences of check writing. As an alternative, a European consumer can vary the payment date each

month by executing the payment authorization documents directly and forwarding them to the Giro facility of his bank or post office. Most employers in Western Europe offer employees direct deposit of salary and wage payments. Receipt of payments by direct deposit is mandatory in some European countries.

Because direct deposit and Giro payments are so widespread, the Commission found that automated clearing centers are emerging as a significant part of the payment systems in Europe.⁴ Consumer payment practices have undergone little change as ACHs have come into use, because consumers have long accepted pre-authorized debits for paying bills and direct deposits for receiving wage and salary payments. By contrast, pre-authorized debit and direct deposit payment methods have not come into common use in the United States, and the growth of the ACH in this country therefore has been slow.

In many European countries, point-of-sale (POS) facilities have failed to generate the interest and investment that they have in the United States. Investors in those countries apparently have thought that the potential cost reductions and profits are not worth the risks associated with the establishment

⁴These clearing centers in Europe are similar in design and concept to the automated clearing houses (ACHs) that have emerged in the United States. This chapter refers to these centers as ACHs, in the generic sense of institutions that have been established to coordinate and automate the clearing and settling of payment transactions among many different kinds of institutions.

of a POS network. Bad check write-offs, one of the major incentives for merchants to participate in POS systems in this country, is not an incentive in many European countries because checks are not commonly used for retail purchases. Where they are, payment is often guaranteed through the use of a check-guarantee card furnished by the consumer's bank. Furthermore, in the United States, the public has become accustomed to use of a plastic card technology as a popular method of payment, whereas in foreign countries such cards are not yet used extensively.

Many of the important consumer issues analyzed by the Commission have also been issues in the major European countries. The problem of proof of payment in a paperless environment, for example, has been resolved in many countries by providing the consumer with a fully descriptive statement. Privacy, an important issue throughout Europe, has been protected in varying degrees by legislation in some countries. In many countries, the consumer's need for stop or reverse payment orders has been answered by value dating, i.e., by affording consumers the ability to specify the date on which a payment will be settled and by permitting the consumer to cancel the payment at any time before that date.

The Commission also reviewed the degree of involvement of government in foreign payment systems. In contrast to the situation in the United States, governments in many European countries actively offer and aggressively market retail payment services to the public through postal Giro systems. Government involvement in providing clearing and settlement services, however, varies from country to country. In those nations where a few large depository institutions dominate the financial industry, the

government role is limited to settlement services with little or no direct involvement in clearing activities. Where the number and diversity of institutions participating in the market are larger, government involvement in providing clearing and settlement services is more pronounced.

Finally, the Commission's International Symposium in New York was directed at determining the effect EFT might have on international payments. The eventual availability of EFT facilities in many countries should facilitate international currency transactions and retail trade across national boundaries. The comparative advantage in such activities now enjoyed by countries with well developed financial markets such as the United States should thereby be increased. The principal future impact of EFT on international payments may include: an intensification of the already strong trend to greater flow of funds among different countries; greater instabilities in exchange rates, which might carry implications for monetary policy formulation; increased interdependence of monetary policies among industrial nations; and some coordination of supervisory policies over banks with branches or banking subsidiaries in more than one country.

The Commission found that multinational corporations are more concerned with the effect of monetary policy and foreign exchange, decisions that are essentially political, than with the potential for increased speed of funds transfer through EFT. These corporations view appropriate documentation of foreign exchange transactions, the ability to maintain internal controls, and adequate audit trails as more important than instantaneous transmission. The concerns of multinational banks, on the other hand,

appear to differ from those of their multinational corporate customers. These banks are interested principally in achieving faster settlement, improved efficiency, and lower cost through EFT.

General Conclusion

The Commission concluded from its study of foreign payment systems that there is potential for improving the United States payment system by taking advantage of the payment system experience of other countries. The Commission's recommendations, which follow, are intended to establish a framework for developing electronic payment services that provide a convenient and cost-effective supplement to the current paper-based payment system.

The remainder of this chapter summarizes and analyzes the facts reported to the Commission on payment services in other industrialized countries and suggests ways in which this experience might be applied to the United States payment system. The Commission centered its analysis of payment developments in foreign countries on the ACHs, Giro or credit transfers, automated teller machine (ATM), and cash dispenser areas. The lack of extensive development in the area of POS facilities in other countries precluded any extended review of experience in that field.

AUTOMATED CLEARING HOUSE DEVELOPMENTS

European depository institutions established their initial ACHs in the late 1960's and placed a stronger emphasis on the development of ACH-like

capabilities than depository institutions have in the United States. As a result, European use of the ACH concept is more advanced than in the United States. This lead manifests itself in substantially greater transaction volumes and a broader variety of payment applications. The British ACH began operations in April 1968 and today processes more than 240 million payments annually, a five-fold increase in nine years. Foreign experience also suggests that direct payroll deposits, coupled with an automated bill-paying capability, can provide cost-effective consumer payments services to all income levels through use of an ACH facility.

Although foreign ACHs concentrate on automated payroll credits and other credit transfers, some process a significant number of debit transfers. The Danish ACH, for example, processes payroll credits that account for approximately 75 percent of its volume, while direct debits make up 20 percent. The French ACH, in contrast, reports that approximately 60 percent of its volume is direct debits, while the British ACH reports that 40 percent of its activity is direct debits. These results may be attributable to the traditionally greater usage of debit transfers (including checks) in those two countries and to special efforts to market direct debit programs.

Foreign ACHs are being used for other applications such as guaranteed check payments, cash dispenser exchanges, and check truncation.⁵ In Great

⁵ Check truncation is the practice of stopping, at some point in the collection process, the return of checks to the depository institution on which they were drawn. Instead of returning the actual

Britain, one-fourth of the ACH volume is in guaranteed check payments. The ACH in France provides an interchange mechanism for cash dispenser payments, and the Belgian ACH is extensively involved in check truncation. In a number of European countries, the government has been instrumental in the acceptance of the ACH. Just as the Federal Government has provided more than 90 percent of the transaction volume for ACHs in this country, European governments have often provided the bulk of the initial ACH transaction volume in their countries. In several foreign countries, the development of ACH capabilities has been a cooperative effort of the government, labor unions, and the financial community.

ACH development in Europe has usually been motivated in part by the perceived economies of concentrating automated clearing in a single central or regional facility. In some countries, such as Belgium, central banks participate in and operate ACHs on behalf of depository institutions. Most ACHs, however, are controlled by the major clearing banks and are operated by either a separate company or a service bureau that is retained to provide the ACH service. These ACHs are owned and controlled by all financial institutions that contribute to their support. The Swedish electronic clearing facility, which is jointly owned and funded by commercial, savings, and cooperative banks, is typical. Where economies of central clearing facilities are not apparent, such as in West Germany, there is no formal ACH organization. There, the large banks have separate agreements with one another for the exchange of magnetic tapes on a bank-to-bank basis. Some West German commercial banks are satisfied with their one-to-one tape exchange arrangements and see no pressing need to develop a central ACH facility. However, this

view may be attributed to the fact that the savings banks and postal Giro services in West Germany process most consumer payments.

Direct access to ACH services varies from country to country. In some countries, direct access is available only to the major clearing banks. In contrast, ACHs in Sweden and Denmark are open to all depository institutions. The British ACH is typical in that it allows corporations to send tapes directly to the ACH, but a bank must sponsor the corporation. The bank must accept financial responsibility for any loss incurred. The ACH experience in Great Britain has shown that direct access to the ACH reduces elapsed time by eliminating the need to deposit the tapes with a bank, and that direct access had improved the marketability of ACH services among corporations in Great Britain. This is true in part because of the limited number of banks in Great Britain, and for that reason this approach may not be feasible in this country.

Summary of Findings

In many industrialized nations, governments and businesses have concluded that direct payment is a cost-effective and convenient method for disbursing payrolls and that the ACH is an appropriate mechanism

⁵ *Continued*

checks, pertinent information contained on the check is electronically captured and forwarded to the drawee bank for processing. The depository institution of first deposit is the usual point of truncation.

for processing such payments. They have reached similar conclusions regarding processing of other credit transfers and pre-authorized bill payments through the ACH.

Based on its study of foreign payments systems, the Commission found that conversion of paper-based payments to paperless ACH entries may be desirable in this country. It certainly is feasible. For example, the Federal Government already has begun to make effective use of ACHs in the distribution of Social Security and other benefit payments. This use should be continued and encouraged where it is cost-effective.

Existing ACH facilities in the United States also could be used to make bill payment credit transfers. Because there is no significant paper-based Giro system in this Nation, however, extensive marketing of the Giro concept would be necessary before this use of ACHs could be achieved on a large scale.

Finally, ACHs can be adapted to uses other than automated direct deposits, such as direct debiting, cash dispenser exchanges, and business-to-business payments. This phenomenon has occurred in Europe, and it may occur in the United States.

Recommendations on ACHs

As suggested in Part I of this report, the Commission concluded that EFT offers benefits to the public in terms of decreased cost and increased convenience and security. Implementation of the following recommendations will help achieve these benefits by making ACH services more widely available.

In many European countries, the public is required to receive government payments by direct deposit and in many countries the labor unions have agreed to allow direct deposit of payrolls. These countries have found that direct deposit is the most cost-effective way of disbursing funds and provides the consumer with the most convenient and secure method of receiving funds. *The Commission recommends that direct deposits should not be mandated; however, the public should have the option of receiving any recurring Federal Government payment by direct deposit.* (20-1-2)

The U.S. Department of the Treasury began using ACH facilities in 1974 to distribute payments to individuals who elected to have their Government payments deposited directly in a financial institution. The Department concluded that depositing payments directly to a financial institution through ACH facilities offers substantial advantages over making such payments by check. With direct deposit, payments are made without the risk of the check being stolen and forged. Consumers do not have to wait in teller lines, which is a problem for many older Social Security recipients, and consumers can have their payments deposited in the financial institution of their choice even when they are away from home.

In addition to the many consumer benefits, direct deposit through ACH facilities provides payors and financial institutions the opportunity substantially to reduce costs of mailing and receiving payments. For example, the Department of the Treasury estimates that in 1977 it will save \$7 million from the direct deposit program and that by 1981 the annual savings will be in excess of \$30 million. The Department believes that financial institutions can by

direct deposits reduce by two-thirds their operating costs for receiving a deposit. The Department also estimates that financial institutions will realize a net savings of \$60 million a year by 1981 as a direct result of the Federal Government distributing payments through ACH facilities.

State and local governments, with a few exceptions, do not offer direct deposit services. The Commission believes that employees and recipients of State or locally administered government payments should be provided with the same options as are available for receiving Federal payments. *Therefore, the Commission recommends that the Department of the Treasury should encourage and assist State and local governments in developing direct deposit programs.* (21-0-0) The Commission found that such assistance can be provided with a minimal expenditure of resources by taking advantage of Department of the Treasury experience with Federal Government direct deposit programs.

Most major companies in the United States have not been actively involved in direct deposit programs or the use of ACH facilities to distribute payrolls, dividends, interest, annuities, or pension payments. In light of the consumer benefits and the potential cost reductions to payors and financial institutions in such programs, the Commission felt that the business community had not committed sufficient resources to study and develop a direct deposit program for the payment of salaries and wages and of interest and dividend payments. The Commission found that the principal reason why many companies in the United States have not been actively involved in direct deposit programs is the loss of float by companies that would result from payment in this manner.

In addition, the Commission found, however, that the relatively low cost of electronic direct deposit may provide the incentive for employers to consider increasing the frequency of payroll payments, and, in the case of large payrolls, to move to payroll cycling⁶ as a cost-reduction measure. Increasing the frequency of payments from the current period of every other week to every week would provide substantial benefits to employees.

The Commission found that in many foreign countries direct deposit of payroll has become either the accepted or the legally required method for receiving pay. Because the Commission believes that in the United States a legal requirement is neither desirable nor feasible, the Commission urges that every effort possible be made to educate the public about the concept of direct deposit.

The Commission determined that labor union participation in direct deposit plans is important because unions represent a substantial number of wage earners in this country. The Commission established that the U.S. Department of Labor is the appropriate agency to perform this task.

The Commission recommends that action should be taken to develop a program to involve labor unions, employers, and employees in explaining the advantages, benefits, procedures, and risks of receiving salary and wages by direct deposit. (14-6-3)

⁶*Payroll cycling is an employer practice that establishes several payment dates during a payroll period, thereby permitting the company to have several smaller payrolls rather than a single large one.*

Currently, millions of consumers have authorized businesses such as utilities, insurance companies, and mortgage lenders automatically to charge their accounts at financial institutions for payment of periodic billings. Most of these charges are made by the company preparing a written draft drawn on the consumer's account. These recurring bills could be paid automatically through ACHs.

The Commission found that in some foreign countries, much ACH transaction volume has been generated by the conversion of existing paper-based pre-authorized payments to paperless ACH procedures. This suggests that a similar conversion for the United States might be considered. *Therefore, the Commission recommends that positive steps should be taken to facilitate the conversion of pre-authorized payment drafts to electronic payments.* (15-2-5)

The Commission concluded that steps should be taken by the National Automated Clearing House Association (NACHA), the business community, and the Federal Reserve System to encourage the conversion of pre-authorized payments to ACH processing. As an incentive to hasten the conversion, the Federal Reserve should take steps to ensure that the availability schedules for ACH items are shorter than for checks.

In Europe, nonfinancial institutions have been encouraged to cooperate closely with depository institutions to design new automated payment methods. In the United States, nonfinancial institutions have been involved only peripherally in the development of new payment systems that use ACH facilities. The Commission found that nonfinancial businesses should be involved more directly in payment system designs

if they are to be major users of the systems. The ACH is still in its early stages of development. It is not too late, therefore, to solicit the direct participation of nonfinancial businesses in that development. This participation should lead to greater corporate ACH usage.

The Commission recommends that the depository institutions participating in ACH arrangements should include representatives of various payors and payees on their committees that are considering the development and implementation of new payment services. (22-0-1)

GIRO PAYMENT SYSTEMS

The Giro payment system is as widely available in Europe as is the checking account system in North America and has the advantage of virtually eliminating certain problems that arise in the check system. For example, return items are exceedingly rare. A return item in the checking system can be generated by a number of different circumstances, the most frequent of which is insufficient funds in the debtor's account when the item is presented for collection.⁷ When such a situation occurs, the check is likely to

⁷ A Bank Administration Institute study, based on 1973 figures, indicates that the return rate for insufficient funds was about two-thirds of 1 percent of total check volume. This means that approximately 167 million items were returned out of a total volume of checks of 25 billion in 1973. Bank Administration Institute, "Recommendations for Exception Item Reductions" (1975).

be returned through the full set of institutions that were involved originally in trying to collect it. This return item processing is almost entirely manual and is costly, slow, and a burden to almost everyone involved, including the debtor, who may find himself in an embarrassing situation and most certainly subject to a substantial fee for his error or oversight. In the Giro system, bill payment occurs only from "good funds" in the account of the customer at the time the transfer is ordered. Therefore, return items for insufficient funds or for an account being closed cannot occur.

However, Giros have some shortcomings from the point of view of the payor. The main shortcoming is that in European Giros, at least, the payor's account is charged for the payment at the time payment is ordered. Thus, the payor does not receive the benefit of the "float" that is inherent in the check system. Check float is a result of the fact that the payor's obligation is almost always provisionally settled before the payee's depository account is credited. During this delay, the payor obtains in effect an interest-free loan from the payee. Payors in the United States are accustomed to this characteristic of the checking system, and it may be difficult to induce them to forego it. (Value-dating, described above, might provide a means of mitigating this consumer concern.)⁸

One feature of European Giros is more efficient use of the postal service. Payments to multiple creditors can be ordered in one instruction--for instance, by one letter to the debtor's depository institution. Widespread use of this feature in this country might reduce the quantity of mail that the postal service must process and could save consumers

substantial amounts on postage. Similar savings could be realized through widespread use of the telephone bill paying or composite check services offered by a few depository institutions in this country.

Giro payments result in a significant cost reduction for businesses receiving payments in volume. A business converting a check payment to an automated Giro payment would not need to process the incoming mail into a bank deposit, submit the deposit for collection, wait some time for credit in "good funds" from the bank, and then wait even longer for notification of checks that have been returned. In the automated Giro system, the business would receive both "good funds" and the information necessary in machine readable form if desired to post customer accounts daily in one delivery from its own bank. Bad check losses are eliminated.

Development of Giros

Although Giro systems have a long history in Western European countries, they have grown most rapidly in the past 15 years. Banks in Europe

⁸ See the discussion of float in Chapter 2, "Establishing and Operating an EFT Account." A further point should perhaps be added. Looking at the user as a payee as well as a payor, his net advantage from the use of check float is, at best, slight. For every dollar of float gained by one party in the payments mechanism, there is an offsetting dollar of float lost by another party, and therefore, no net benefit to the public.

traditionally tended to confine their services to businesses and to upper-income customers. The general public did not have demand deposit accounts as late as the end of World War II. Giros provide a convenient means of payment even for consumers who do not wish to have an account in a depository institution.

In many European countries there are at least two Giro systems: the postal Giro and the bank Giro. Some countries have additional Giro facilities operated by savings banks, credit unions, or other depository institutions. Postal Giros are government-operated and frequently subsidized. The service is available at almost every post office. Giro systems run by depository or other institutions are often structured to compete with the postal Giro. One reason for the widespread popularity of Giros is that demand deposit accounts are so little used by the general public. Giro systems in some countries are so readily available, convenient, and inexpensive that they meet the payments needs of most consumers. This is especially true because Giro users need not have a demand deposit account. In the Netherlands, for example, Giro account services are available through post offices, commercial banks, and even through a public Giro operated by the City of Amsterdam.

Automated Giros

Giro systems were introduced in most European countries well before electronic data processing became available. Even though Giro payments are now being automated in some countries, many Giros continue to have manual operations.

One impediment to rapid development of automated Giro payments is that efficient processing requires that the bill or invoice sent by the consumers to the Giro facility be readily machine processable. In many countries, cooperative efforts of depository institutions, nonfinancial business, and sometimes of government enterprises are under way to standardize these payment documents, especially regarding the information appearing on them that is used in making Giro payments. Such cooperative efforts have been encouraged and expedited by government policy and action. A strong tradition of antitrust law and enforcement similar to that in the United States does not exist in most European countries. Thus, neither antitrust considerations nor financial regulations comparable to those in the United States impede cooperative efforts to implement new technologies.

Summary of Findings

Giro-like payments offer consumers another option for making payments in addition to debit transfer payments. The United States now has a payment system based almost entirely on debit transfers made by check. With the advent of electronic networks including the Fed Wire, the Bank Wire,⁹ and now the ACH system, credit transfers are not only possible but are becoming an accepted way of making corporate-to-corporate transfers of large dollar amounts and direct deposit of payrolls. These services, now available to corporations, could be offered to consumers for

⁹For descriptions of the Fed Wire and the Bank Wire, see Appendix C, "The Payment System in the United States."

payment of merchant bills. Such payments can be converted most expeditiously to electronic form if the bill is machine readable and if the invoice is standardized. The consumer could approve the bill and forward it to the depository institution, which could make use of ACH facilities to transfer the funds.

Giro-like accounts involving direct deposit, together with credit transfers or guarantee of checks, could extend depository money services to all income recipients in the United States, including a portion of the public (about 15 percent) without deposit accounts today. Although some aspects of foreign Giro systems may prove to be useful examples for extending money services, the pervasive government involvement that characterizes the European systems does not appear to be necessary for the developing automated payment system in this country because depository institutions are making use of present-day electronic technology. Encouragement and use by the Federal Government, however, may facilitate progress in this country.

To be effective, a Giro-like system requires that the invoice contain a standardized method for identifying the account to which the funds are to be transferred and the amount to be transferred. The size, shape, and thickness of billing invoices would also probably require standardization for an automated credit transfer system.

Finally, it appears that Giro-like payments could become an alternative to pre-authorized debiting of customers' accounts by business. Such pre-authorized debiting is possible now through ACHs, but it has grown slowly in this Nation as a payment practice. Electronic Giro-like payments are easier

for businesses than receiving payment through the checking system. Consumers retain control of the timing of the bill payment, which is lost to them to some extent under pre-authorized payment plans. In addition, many costs savings for businesses afforded by pre-authorized debits could be achieved by Giro-like payments.

Recommendations on Giro

The Commission found that Giro-like transfers offer consumers and businesses in Europe certain desirable features that are not provided in this country. The Commission concluded that the introduction of such features into the United States payment system should be encouraged, and that experiments should be undertaken by both the private sector and the Government. *The Commission recommends, therefore, that the Department of the Treasury should extend its credit-transfer payments program to demonstrate the feasibility of using credit-transfer systems for payments that are made to the Government as well as by it.* (15-3-5)

In the United States, corporations already pay to the Government by credit transfer the amounts of income taxes withheld from employees' pay. The Department of the Treasury has been a pioneer in using ACHs and was the first organization to distribute payments nationally through the ACH. This program has been a major factor in spurring ACH development in this country. The Commission determined that the Department could also take steps to use credit-transfer techniques for consumer payments to the Government. A Government program that requires consumers to make payments to the Government on a

regular basis, such as the Veterans Administration insurance program, could be used for a pilot program.

The European experience indicates that a standardized billing invoice, including standardized payments information on the Giro transfer order, has aided in gaining customer and corporate acceptance and use of Giro payments. Such a standardized invoice does not exist today in the United States, although some studies and experiments are underway by a group of bankers and businessmen in New York through the Electronic Giro Working Committee. Standards for an optically scanable bill line on invoices for consumer bill payments is also under development by an American National Standards Institute working group.¹⁰ The Commission has encouraged the work of these and other similar groups, which could lead to a new form of payment service and increased ACH transaction volume. The Commission recognized, however, that the development in this country of a standardized billing invoice and standardized payments information will be difficult and is a major obstacle to the further development of this kind of payment service.

Experience in Western European countries suggests that cooperation has been a necessary ingredient in conversion of electronic transfers. Banks, corporations, and governments have worked together to standardize payment procedures and to establish systems for automating these procedures. The Commission established that if the cost reduction and convenience benefits of substituting credit transfer for a significant portion of check payments are to be realized in the United States, banks, corporations, and Federal Government will have to work together closely to establish a mutually acceptable system. Therefore, the Commission recommends that the National Bureau of

Standards and the regulatory agencies should cooperate with the financial industry and nonfinancial businesses to develop a standardized invoicing and billing procedure that will permit cost reductions for all participants through conversion of payments to Giro-like transfers. (10-5-7)

Cooperative efforts in the private sector should be supported by the Federal Government in order to hasten their successful conclusion. Government funding in this effort should be considered along with participation in developing a voluntary standard and publicizing results of the work.

The Commission found that the operating procedures of NACHA are currently structured to accommodate direct payroll deposit and automated bill payment applications. There are no specific provisions covering Giro credit transfers used for bill payments. The widespread processing of Giro credit transfers by ACHs outside the United States is ample evidence that this payment application can contribute heavily to ACH transaction volume and that it should be provided for in ACH rules and regulations in this country.

The Commission recommends that depository institutions participating in ACH arrangements should expand their rules and operating procedures to include specific rules, regulations, and data formats that will permit Giro-like credit transfers to be processed by United States ACHs. (11-6-7)

¹⁰ See Chapter 11, "Standards for EFT," for a discussion of the standards-making process used by the American National Standards Institute.

The Commission noted that a Giro-like credit transfer may require certain additional information (of a type not necessary for a debit transfer) to be communicated through the ACH to the business or depository institution. NACHA can and should consider modifying its rules to provide for communication of such information. In so doing, NACHA will encourage the use of the ACH for the processing of automated Giro credit transfers.

CASH DISPENSERS AND AUTOMATED TELLER MACHINES

Automated teller machines (ATMs) and cash dispensers are electronic terminals that permit consumers to execute basic financial transactions without teller assistance. ATMs enable the consumer to make deposits, withdrawals, cash advances, transfers, and loan payments. Cash dispensers permit only withdrawals of currency and coin. As of Dec. 31, 1976, there were about 4,800 ATMs and 550 cash dispensers in the United States.¹¹ Europe has approximately 4,500 electronic terminals of this type, 3,500 of these being in France, Great Britain, and Sweden. With 4,000 to 6,000 in operation, Japan has the greatest number of cash dispensers.

In Europe and Japan, cash dispensers have been in widespread use since the late 1960's. Because they also use Giro payments and ACH services such as direct deposit of payroll, these cash-oriented societies are adequately served by cash dispensers and do not need the more elaborate services an ATM can provide. Besides, ATMs are considerably more expensive than cash dispensers and require a higher utilization rate to justify their investment. In

consequence, there are many more cash dispensers than ATMs in Europe and Japan.

Depository institutions in some European countries encourage consumers to use cash dispensers because depository institution offices customarily are open only a few hours a day and are closed on week-ends. There are quite often long lines at teller windows when they are open. Under these circumstances, cash dispensers save consumers time and are more convenient. Because consumers usually cannot cash checks at supermarkets (which are, in any case, rare) and are accustomed to direct deposit of payroll, they tend to welcome cash dispensers as an attractive way to obtain cash.

In Europe and Japan, cash dispensers reduce expenses for depository institutions because they permit them to keep shorter hours and employ fewer tellers. They ease the burden on tellers during peak hours. They also serve as an alternative to the establishment of a costly branch office.

European countries and Japan believe in sharing technology while competing at the customer service level. Sharing of ATM and cash dispenser terminals can lead to economies of scale. In Europe, networks mutually supported by a number of institutions are not considered to be in restraint of commerce. Commercial banks cooperate with one another in order to compete with other depository institutions in providing depository services.

¹¹NCEFT, "Summary of Data on Major Terminal-Based Electronic Funds Transfer Projects in the United States," IWD-37 (revised March 1977).

Summary of Findings

Judging from experience in foreign countries, as ACH services increase in the United States, there may be a greater demand from both consumers and corporations for cash. It will depend on the extent of use of debit and credit cards. The need that arises will be met by merchants and cash dispensers rather than from depository institution offices. Corporations will be unable and unwilling to try to persuade their employees to accept direct deposit of payroll unless cash can be obtained readily. Similarly, consumers will desire a means of obtaining cash when depository institutions are not open. These institutions are likely to welcome the combination of direct deposit and cash dispensers as a way of reducing operating expenses.